



DVR-PC8/16 Series

User Manual

Includes setup, usage, and troubleshooting information for your DVR

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Important: Read all the installation instructions carefully before you plug your DVR into a wall socket.

Warning

Electric Safety

To reduce risk of fire or electrical shock,
Do not expose this product to rain or any moisture.

Caution

Install the battery correctly to avoid risk of an explosion.
Align the battery properly and use only the same type of batteries
as recommended by manufacturer
Dispose of used batteries according to the manufacturer's instructions.

Cautions

Read all of the instructions and safety information before you plug your DVR into a wall socket.

Signs of Caution and Warning



Warning: This sign indicates that the user could die or wounded seriously if not used or installed properly.



Caution: This sign indicates that the user could be wounded or could expect property damage if not used or installed properly.

How to handle lithium battery



Warning

1. Change the battery after disconnecting the power plug of the product.
 2. Connect the polarity of the lithium properly while changing.
 3. Change with the same type of battery recommended by the product manufacturer.
 4. Follow the instruction from battery manufacturer to change the battery.
- ※ It is important that safety instructions marked on the product and in the documentation are followed.

Important Safeguards



Warning

1. Use the power cord that came with your DVR or recommended by the supplier.
This may cause fire.
2. Do not dismantle or assemble the product.
This may cause malfunction or fire.
3. Do not touch the product with wet hands.
This may become a reason for malfunction or fire.
4. Inquire from the place of purchase if the need for installation in distinct place arises.
Delinquent installation may be the reason for malfunction, electric shock or fire.
5. Ground applies to video products equipped with a 3-wire grounding type plug having a third (grounding) pin.
This plug only fits into a grounding-type power outlet.
If grounding is not done, this may cause break down or electric shock.
6. Ground connection must not touch gas pipe, water pipe or telephone line.
If grounding is not done properly, this may cause electric shock.
7. Prevent metallic foreign substance from going inside the product.
This may become a reason for malfunction or electric shock.
8. Prevent water from entering inside electrical parts.
Clean with a dry tower otherwise this may become a reason for malfunction or electric shock.



Caution

1. Do not drop or give shock to the product.
It may become a reason for malfunction.
2. The air inhaler of the front panel and air outlet of the back panel must not be blocked while installing.
The internal temperature of the product would be more than what is allowed and it may become a reason for malfunction or would generate heat.

3. Do not touch the product or the power plug, when there is thunder.
It may become a reason for electric shock.

4. Do not install the product near or on top of heating system.
The internal temperature of the product would be more than what is allowed and it may become a reason for malfunction or would generate heat.

5. Do not install the product on inclined or unstable location and where vibration could be committed.
It may become a reason for malfunction.

Power Management



Warning

1. Do not connect on the middle of power plug or use extension cord.
It may generate heat or cause fire.

2. Do not touch the power cord with wet hands.
It may become a reason for electric shock.

3. Prevent wetting the power plug by humidity.
It may generate heat or cause fire. The power cord is not waterproof.

4. Disconnect the power plug from the socket if you are not using the product for a long time.
It may become a reason for short-circuit or electric shock.



Caution

1. Do not disconnect the power plug by pulling it out.
To turn off the power, click the power button from the front panel.
When the system stop abnormally the power button might not work. In that case, press the power button for at least 4 seconds to turn off your DVR.

2. Do not cut off the power artificially, It may give shock or vibration while the hard disk is activating.
It may become a reason for hard disk failure or loss of data.

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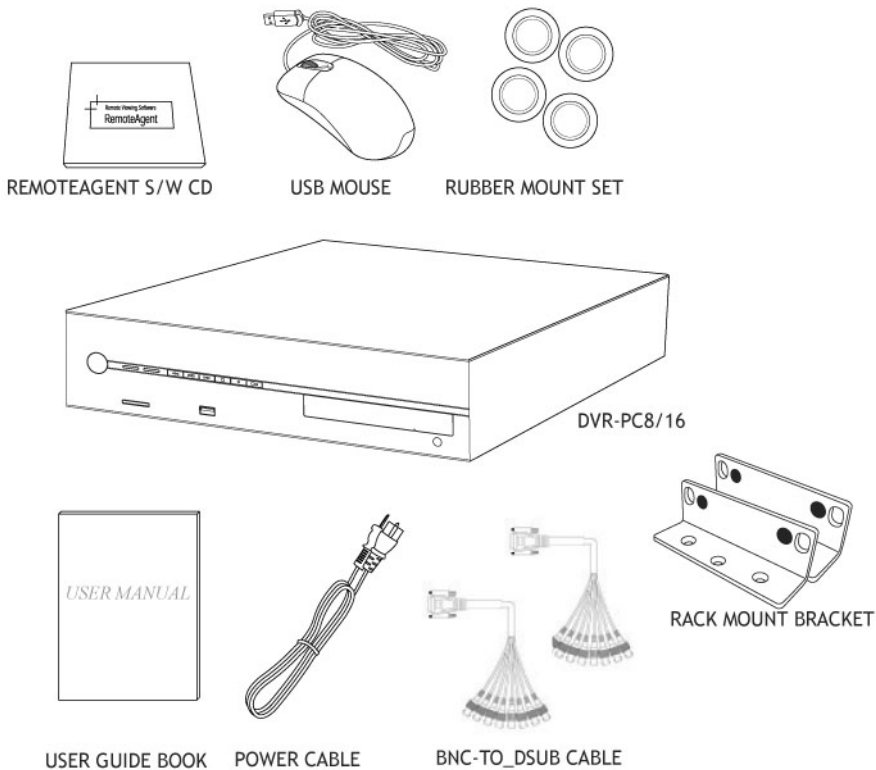
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1. SYSTEM STRUCTURE

Before going any further, be sure that you have received the following items with your DVR. Components may vary according to your model and local area.

Your DVR-PC8/16 Series DVR includes the following components. Carefully inspect each component to make sure nothing is missing or damaged. If any of these items are missing or damaged, notify your dealer immediately. Keep packing utilities for moving or storage purposes afterwards.

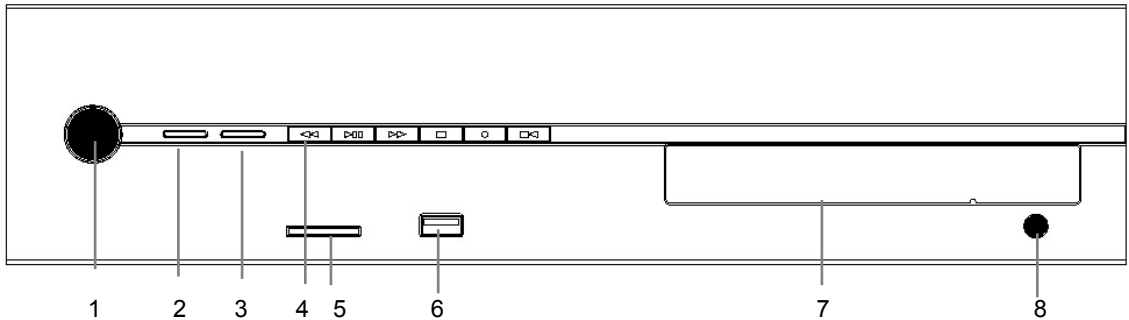
1.1 DVR-PC8/16 Series



Qty	Contents
1	User Manual
1	RemoteAgent CD
1	Power Cord
1	Rubber Mount
1	Mouse
2	8CH BNC-to-D-sub Cable (Select by Max Channel Number)
2	Rack Mount Bracket

2. System Configuration

2.1 DVR-PC8/16 Series Front Panel



DVR-PC8/16

No.	Functions	No.	Functions
1	Power Button & Power LED	5	SD/MMC Port
2	HDD LED	6	USB Port
3	Network LED	7	CD-RW / DVD-RW (Option)
4	Instant Playback	8	Eject Button

2.1.1. Power Button

To turn your DVR, press the power button shortly (1 second).

2.1.2. HDD LED

Shows data is either being read or written in HDD.

2.1.3. Network LED

This LED is lit when a network client(RemoteAgent) is connected to the system.

2.1.4. Instant Playback

Quick action tools for playing and recording data through various storage media.

2.1.5. SD/MMC Port

Data can be saved with either a SD or MMC card.

2.1.6. USB Port

This internal USB port is used to connect the USB to the system. USB port is composed in back panel of the system also.

2.1.7. CD-RW / DVD-RW (Option)

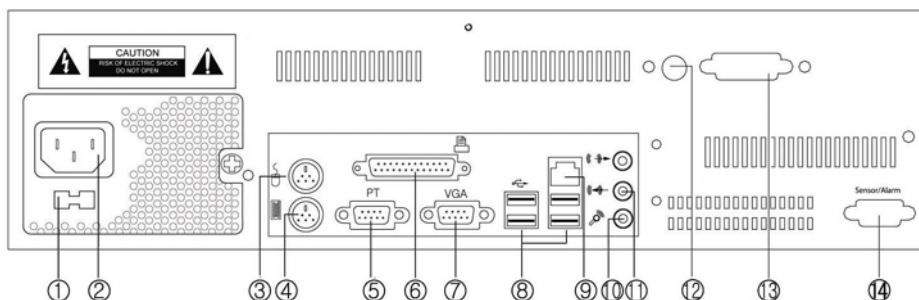
It is possible to mount CD-RW / DVD-RW as backup or removable HDD as data storage.

2.1.8. Eject Button

Open and eject CD-RW/DVD-RW

2.2 DVR-PC8 Series Back Panel

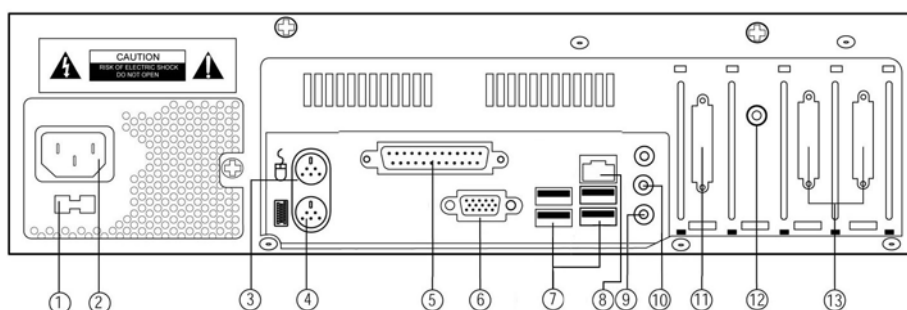
Note Composition may differ according to system model.



No.	Functions	No.	Functions
1	Power Selection Switch	8	USB Ports
2	Power Connection Circuit	9	LAN Port
3	Mouse Port	10	MIC
4	Keyboard Port	11	Speaker Output
5	PTZ Controller Port	12	Spot Monitor Output (BNC Jack)
6	Printer Port	13	Image Input/D-Sub DVR-PC8: 8CH x 1EA
7	PC Monitor Output	14	Sensor / Alarm Connection

2.3 DVR-PC16 Series Back Panel

Note Composition differs according to system model.



No.	Functions	No.	Functions
1	Power Selection Switch	9	MIC
2	Power Connection Circuit	10	Speaker Output
3	Mouse Port	11	Alarm Input/Output Port/ PTZ Controller Port
4	Keyboard Port	12	Spot Monitor Output (RCA Jack)
5	Printer Port	13	Image Input / D-Sub DVR-PC16: 8CH x 2EA
6	PC Monitor Output (VGA)		
7	USB Ports		
8	LAN Port		

3. INSTALLATION

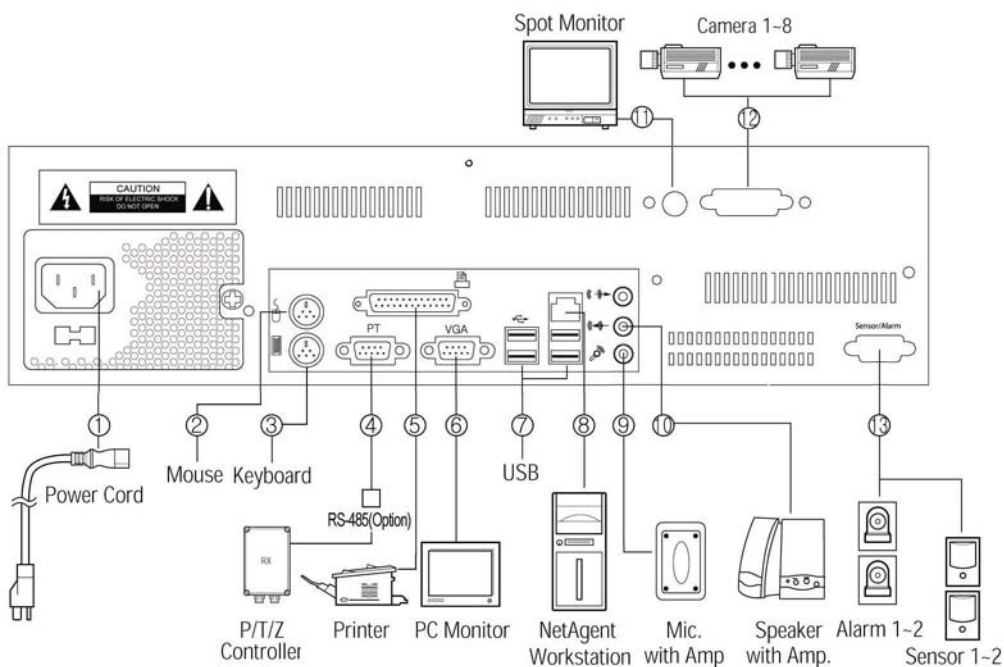
3.1 DVR-PC8 Series Installation

This section describes how to connect peripheral devices to DVR-PC8. Connect the peripheral devices by following instruction as below.

(The connections might vary according to the components of product model and the chosen specifications of the user)

Install DVR-PC8 on flat surface, and use rubber mount if needed. Install on the rack in case of using 19 inch, and leave 2.5~3U(1U=1.75 inch or 4.45 cm) space for spare room.

Note Install in well-ventilated places for system heat prevention.



3.1.1. Power Connection Circuit

Connect the enclosed power cord into plug.

Note Before connecting the power, convert the power switch, AC110V ~ 120V ->115, AC220V~240V->230, depending on the power voltage on the power socket.

3.1.2. Mouse Port

Connect PS/2 or USB type mouse to control your DVR

3.1.3. Keyboard Port

User can connect a keyboard if required. (Option)

3.1.4. PTZ Port

Connect RS-485 cables to PTZ port to control using PTZ controllers.

3.1.5. Printer Port

To print the searched image with best quality, high quality color printer and exclusive paper are recommended for use. To install printer driver, refer to "Viewer->Other Setting->Add Printer".

3.1.6. PC Monitor Output

Connect PC monitor to view the image output. DVR-PC8 series supports both PC monitor and Spot monitor. When the analogue monitor is connected to RCA Jack, the part of analogue image is always outputted except for the various user interface shown in the PC monitor. The screen mode of the spot monitor output is always full screen, and is controlled independently with the PC monitor.

3.1.7. USB Ports

Connect exterior CD-RW with USB interface. Only approved USB CD-RW models by manufacturers can be used.

3.1.8. LAN Port

For remote monitoring, connect the network to LAN (Local Area Network), Internet, or exclusive line of TCP/IP basis. IP address should be fixed, and dynamic IP address allocated from DHCP cannot be used.

3.1.9. MIC

Input voice is synchronized to channel 1. When the voice signal is in line level, connect to line In jack above the MIC Input jack.

3.1.10. Speaker Output

The output signal is line level. To expand the output signal, there is a need for an amplifier.

3.1.11. Spot Monitor Output

When the analogue monitor is connected to BNC Jack, the part of analogue image is always outputted except for the OSD. The screen mode of the spot monitor output is always full screen, and is controlled independently with the PC monitor.

3.1.12. Image Input

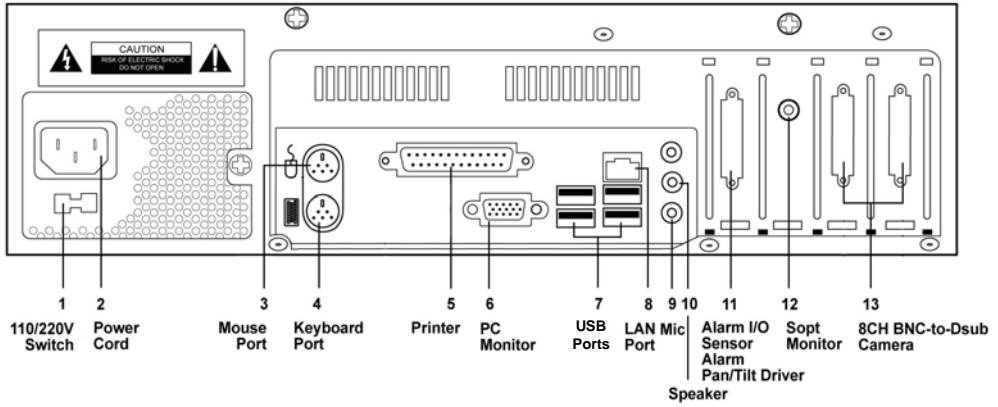
Image input has analogue composite signal and can be set to NTSC or PAL, according to the requirement of the user during product order. Be sure to match the type of camera to be corresponding with the system. To get good quality image, check the power of the whole system and the safety of the ground construction. Also, adjust the lighting and focus iris of the camera properly.

3.1.13. Sensor Input / Alarm Output Port

To use sensor input and alarm output, alarm I/O Terminal (Option) would be needed. Connect cable of terminal to alarm output port, and then each sensor and wire of alarm devices to the corresponding terminal.

Note A sensor alarm is activated by a relay or switch. It can be connected to either N/O (Normal open) or N/C (Normal Close) type and the user has to set the sensor accordingly. The contact closure time of the switch or relay must be greater than 0.5 sec.

3.2 DVR-PC16 Series Installation



No.	Functions	No.	Functions
1	Power Selection Switch	9	MIC Input
2	Power Connection Circuit	10	Speaker Output
3	Mouse Port	11	Alarm Input/Output Port/PTZ Port
4	Keyboard Port	12	Spot Monitor Output (RCA Jack)
5	Printer Port	13	Video Input / D-Sub DVR-PC1: 8CH x 2EA
6	PC Monitor Output (VGA)		
7	USB Ports		
8	LAN Port		

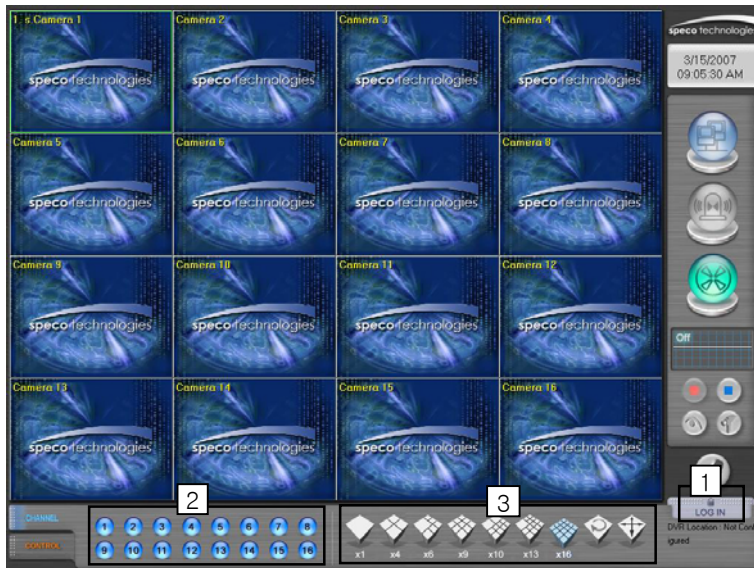
4. Basic Operation

4.1 Power Connection

Check the connection of the peripheral devices of the system and connect the power. When the power cord is connected, The system's program will start.

To end the program, wait until the booting is completed and press the power button on the front panel.

4.2 Start Program



4.2.1. Login

To use any of the menu, login as a user login. Press the [Tools] button on the main screen and menu will appear. On the menu, press [Login] button to login as a user.


4.2.2. To see Channel Image


Each number will be corresponding with the connected camera. Press each number to see if the channel image can be seen properly. When the channel number is pressed, only the image of the camera can be seen.

4.2.3. Split Screen Mode

According to the user environment, the current display screen can be seen in several screens or by only one screen.

When the user presses each button, the screen will change to 1, 4, 6, 9, 10, 13, 16 split screens. Press the [Display

Division ] button and the screen will automatically alternate from group split mode. Refer to the time setting for screen

sequence from the Settings. When [Full Screen Mode ] is pressed, the image screen will be shown without the menu.

Double click on the full screen and it will change back to main screen with the menu.

4.3 To Start Recording



4.3.1. Start Recording []

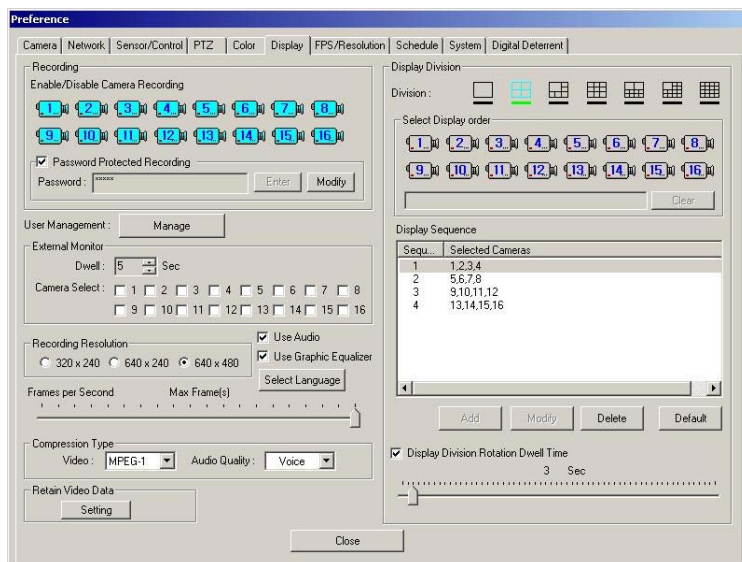
When the power is connected to the system, recording will start automatically after 3secs. But if recording does not start, press the [Start Recording] button.

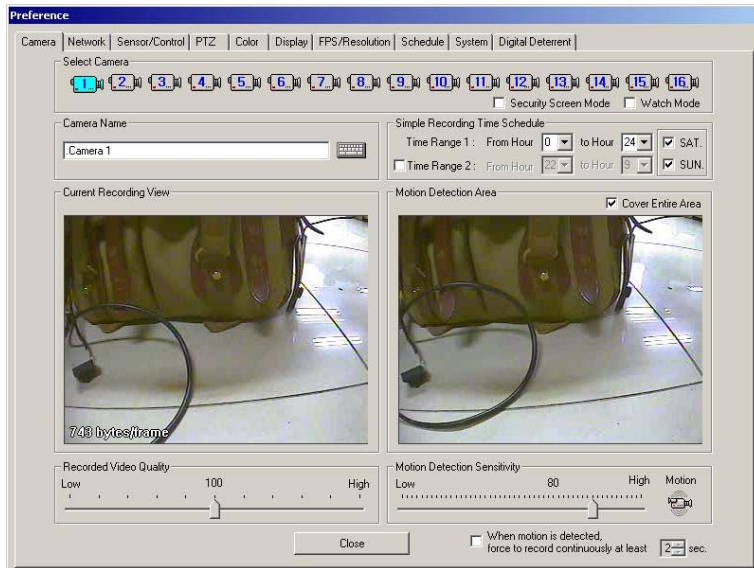
4.3.2. Stop Recording []

Click [Stop Recording] button if recording is not required.

4.3.3. Recording Setup []

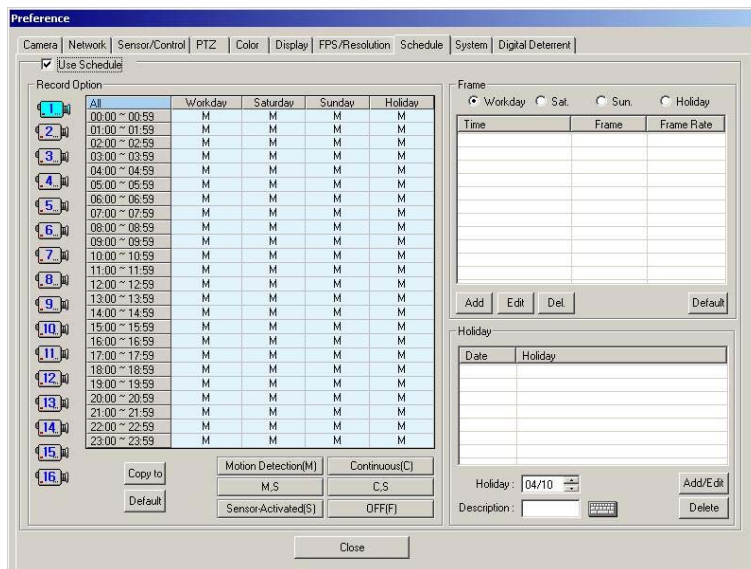
1) Basically, all the cameras connected will be recorded. Set the image-recording environment according to user environment. Set the recording camera from [Preference]→[Display].





- 2) Set the simple recording time schedule from the [Camera] tap. If the time schedule is not set, the recording will be 24hours.
- 3) Set the motion detection area and tick off [Cover Entire Area] to record the camera images only when there is motion on the selected area. When [Cover Entire Area] is selected, the whole image is active

- Note**
1. Click left mouse button: Creating one area box.
 2. Click left mouse button and drag : Creating area box followed by drag movement.
 3. Double click left mouse button : Creating all selected box area.
 4. Click right mouse button : Deselect one selected box.
 5. Double click right mouse button : Deselect all selected area.

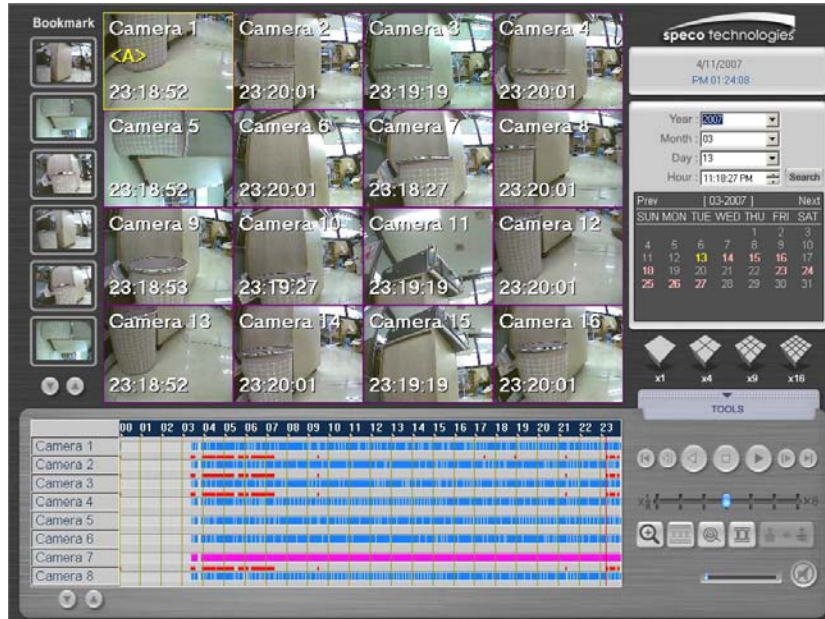


- 4) To set the recording mode per hour of each day and channel, go to [Preference]→[Schedule]. Recording has to be stopped in the main menu by pressing the [Stop Recording] button to set the recording schedule. Select camera number, time and recording mode. Each recording mode will be displayed on the left bottom of each channel screen on the main screen. For more detail explanation of [Schedule], refer to [Preference→Schedule].

4.4 Search Recorded Image

Press the [Viewer] button on the main screen, enter a password and a confirm password and then a screen layout as shown below will appear.

Recorded images can be played back easily by date, time and camera.



4.4.1. Search recorded image by Date

- 1) Select the year/ month/ day/ time from upper right category of the screen layout.
- 2) Date can be selected from the calendar without selecting each category. The date with recording will be indicated by a pink color. The present date is in yellow color.
- 3) When the date is selected, the recorded images of the chosen date will be shown on the screen. If there is no recording in that date, images from the nearest date will be shown.
- 4) To see the searched image, press (▶) button. Move speed increase bar to adjust the playback speed.

4.4.2. Search recorded image by Time

- 1) Image of the searched date can be searched on an hourly basis.
- 2) The time with recorded images will be indicated in pink color.
Following is the explanations for the graph color shown on the time graph.

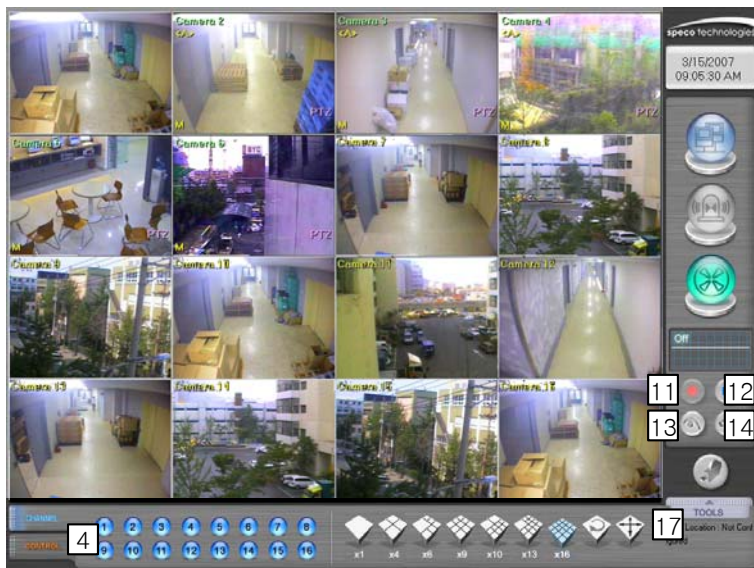
Black Color : There is password on the recorded image file. Enter setting password on the DVR. After entering the password, press the [OK] button to call up the recorded image. Refer to [Preference]→[Display]→[Password Protected Recording] category for password setting. Be careful not to forget the password or else the image cannot be playback.

Blue Color : Recorded image files with motion detection settings.

Pink Color : Recorded image files with continuous recording settings.

5. Screen Layout

5.1 Main Screen



No.	Name	No.	Name
1	Current Recording Screen	10	Audio Input Indicator
2	Camera Channel	11	Start Recording
3	Split Screen Mode	12	Stop Recording
4	Control (Alarm Output)	13	Search Recorded Image (Viewer)
5	System Information	14	Settings
6	Date / Time	15	PTZ Settings
7	Remote Connection / Transmission Indicator	16	Tools
8	Sensor Event Indicator	17	DVR Location
9	Recording Status Indicator		

5.1.1. Current Recording Screen

Show the images of the connected cameras. Each channel number of the connected camera and channel name set by the user will be indicated. According to the screen status (security screen mode, watch mode), the image will appear and a mark (M / C / M, S / C, S / S / F / P, S) will be on the right bottom of each channel image. Refer to "Preference" for channel name and recording settings. To enter each channel name, press the [Setup] button from the main screen and go to [Camera]→[Camera Name] to enter the necessary content. Refer to the explanation for [Preference]→[Camera] tap.



Following is the OSD indicated on the screen.

- 1) Camera location: Camera 1
- 2) Audio connection: <A>
- 3) Recording Mode: M / C / M, S / C, S / S / F / P, S
- 4) PTZ Driver Connection: PTZ

5.1.2. Camera Channel



Switch fast and conveniently between several channels to view images from each camera. When you click Number 2 button, images from camera 2 can be seen.

5.1.3. Split Screen Button



Split the current recording screen to display 1, 4, 9, 10, 13, 16 screen mode.

Cameras displayed on 4 or more split-screen modes can be instantly enlarged for detailed inspection when left button of the mouse is clicked on the desired camera. Double click the left button of the mouse while in enlarged screen mode and previous split-screen modes will be displayed

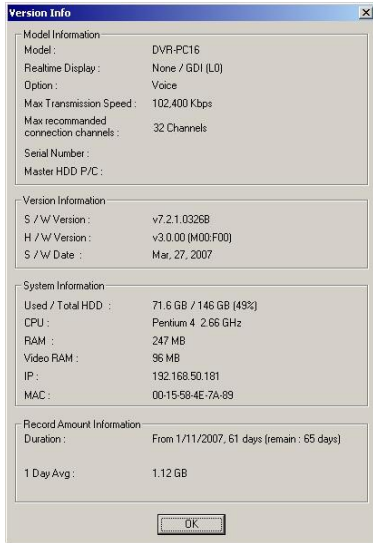
5.1.4. Control (Alarm Output)



The alarm output connected to the DVR can be forcefully activated. Press the button and the sensor connected to the number will be activated. When a sensor is detected, the number with sensor activation will be indicated. Refer to [Preference]→[Sensor/Control] section for reference.

5.1.5. System Info

Click the logo on the main screen to view the general information of the system.



Double click the Speco Technologies logo "e" on the main screen to view the general information of the DVR.

Note The contents may differ depending on the product purchased.
The S/W, H/W versions may differ depending on the product model and the user settings.

The S/N (Serial Number) of the version information is used when the administrator's password is lost. Check the Serial Number when the product is purchased. Inquire more information from the buyer or dealer if the S/N is not in the General Info.

5.1.6. Date / Time

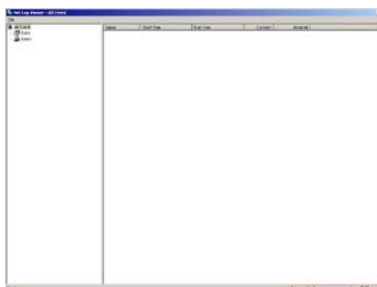


To change the date and time, click on the figures that show date or time on the DVR main screen and then enter proper password.

Date / Time Setting window will appear when the password is correctly entered. Choose "USER EDIT" in "Select Nation" category, and leave, "Automatically adjust clock for daylight saving changes" unselected.

Make the changes on the date and time then press [Modify] button. DVR stops recording automatically when date/time setting has been changed. Click [Start Recording] button to start recording the images.

5.1.7. Remote Connection / Transmission Status

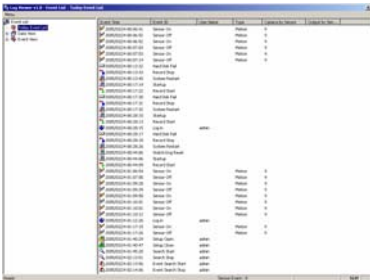


Transmission status indicator flashes while connecting with remote surveillance Agent Series to indicate that it is presently transmitting.

Shows information of the connected user when the corresponding button is clicked while the Agent Series is connected.

When the system is not connected, double click the indicator to view full connection history, the Net Log Viewer.

5.1.8. Sensor Event Indicator



The indicator flashes when the alarm sensor is operating.

Note Double click the sensor indicator with the left mouse button to start the Log Viewer. The log viewer shows the list of occurred events by date and type of the event.

This information can be printed or sent in files that can be displayed in Microsoft excel.

5.1.9. Recording Status Indicator

The tape icon flashes to show the recording status and when it does not flash, it has been deactivated to show that it is not recording.

Note When all channels are in "Watch Mode," they are not recording.

5.1.10. Audio Input Indicator

When the audio is being recorded, its status will be shown in graphical display.

5.1.11. Start Recording

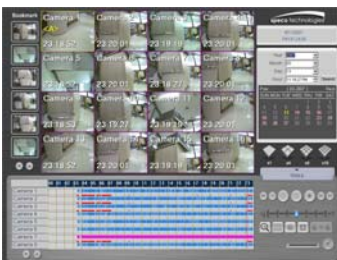
Recording of all the cameras installed will be done according to the user settings.

5.1.12. Stop Recording



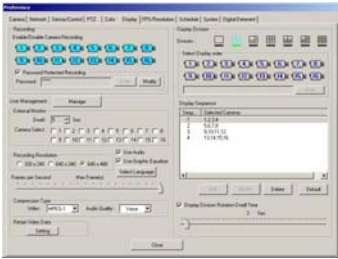
Stop recording of all the cameras. Click [Stop recording] button and a warning message will appear. When the recording does not start for more than 5 minutes, the recording will start again automatically.

5.1.13. Search Recorded Image (Viewer)



Start the Viewer to search recorded images.
(Refer to Using Viewer section for detail instructions)

5.1.14. Preference (Settings)



Selection screen will appear for setting recording section, image quality, desired recording time, motion sensitivity and etc. Refer to "Setting Customized Functions" section for detail explanations.

5.1.15. PTZ Setting



When the camera controller setting is incorrect or if it's not installed, it will not activate. The controller enables users to control the Pan/Tilt, Zoom In/Out, screen adjustment functions of the camera.

Refer to "Settings"→"PTZ" tap for settings of each function.

This function can be only used on the channel screen with [PTZ] indicated on the main screen. When PTZ panel appears on the right side of the main

screen, the " virtual joystick" appears on the selected channel screen. Press the left of the mouse and it will change to arrows. Move the mouse to move the PTZ in the desired direction. PTZ Speed becomes faster while mouse moves far away from the center of the screen and becomes slower if the mouse comes near by center of the screen. You may control the Zoom In/Out using scroll button of the mouse.

The following are the explanations for each button of the camera controller.

1) Pan/Tilt

Camera with installed P/T controller will move in each direction while the button is pressed down (The Pan controls the right left direction of the camera and Tilt moves the camera pointer). The movement stops when the pointer is not pressed.

2) Zoom (In/Out)

The size of the image will be enlarged(+) or reduced(-) while the button is pressed down.

3) Focus (Near/Far)

Objects on the screen will be focused(near and far) while the buttons are pressed down

4) Iris (Open/Close)

IRIS Open(+)/IRIS Close(-)

5) Speed

Adjust the speed of the P/T/Z

6) Preset

Displays the Preset recall buttons. (Refer to 'Camera Control' for the method of saving the preset settings.



7) Preset Name

Preset Location Name of the preset number set will be indicated.

8) Auto

Move the camera image automatically. This function is limited according to the installed PTZ driver.

9) Tour

Move according to the route of the preset location set. This function is limited according to the PTZ driver set.

10) Wiper

Activate the wiper installed on the camera. This function is limited according to the PTZ driver set.

11) Menu

It is a function supported on the PTZ driver and this is used when there is other setting function. This function is limited according to the PTZ driver set.

12) Aux1-4

The user uses this to set other extra functions that can be installed within the PTZ driver's limit. This function is limited according to the PTZ driver set.

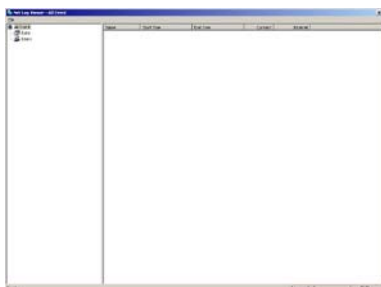
13) Close

Return to the main screen after closing the PTZ panel of the main screen.

5.1.16. Tools



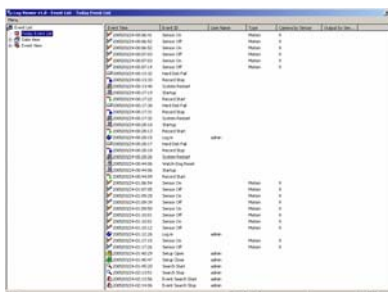
Press the Tools button and a menu to adjust the picture quality of the screen, remote connection and sensor activating log file and also Log In/Log out will appear.



Remote login

The remote transmission indicator flashes while it is connected to the Agent Series, remote surveillance program.

It is the same screen that appears when [Network] button of the main screen is pressed.



Event Log

Sensor Indicator flashes when sensor is activated on the connected system.

It is the same screen that appears when [Sensor Indicator] of the main screen is pressed.



Play Audio

On/Off function for Live Audio out put.



Log In / Log Out

To use the program, login user. Press the [Log In] button to login by user. When [Log In] button is pressed, a window will appear for the user to input password. The system will not have any password when it is started for the first time. Press [OK] button and login. The user can set the user name and the password after doing this.

To prevent other users from using the program, the login user should log out and log in again when the menu buttons are required to be used again.

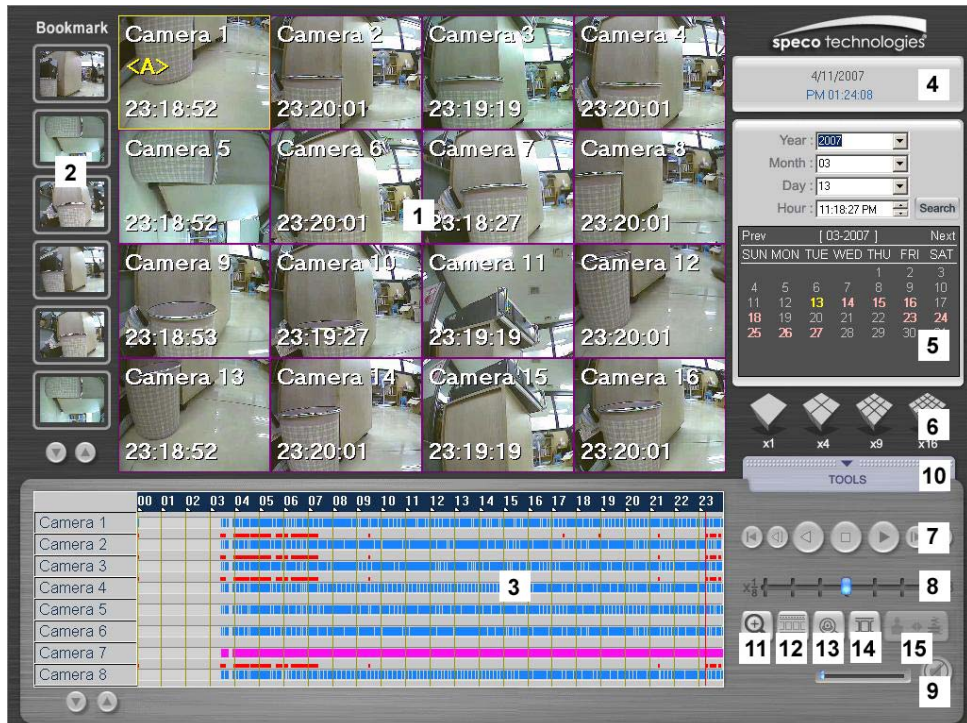
Note Set the password for Login. Refer to "Setup→user password setting".

5.1.17. DVR Location



Enter the installed DVR location. Will be indicated on the main screen after it is entered. Press the keyboard button to enter the letters.

5.2 Viewer



NO.	Name	NO.	Name
1	Current Searched Screen	9	Adjust Audio for Playback
2	Bookmark	10	Tools
3	Time Position Indication Bar	11	Screen Zoom In/Out
4	Indicating Date / Time	12	Panorama
5	Search Calendar	13	Search Sensor Event
6	Select Split Screen	14	Adjust Picture Quality
7	Playback	15	Deinterlace Button
8	Adjust Playback Speed		

5.2.1. Searched Screen



Displays the images that match the search criteria. Up to maximum of 16 channels can be displayed simultaneously. Change the screen to 1-channel and click [Replay] button to see real-time images while quick search you have seen on TV.

OSD indicated on the screen is as below.

1. Camera Name: Camera 1-16
2. Audio Connection: <A>
3. Recording Time: 00:00:00 (Hr: Min: Sec)

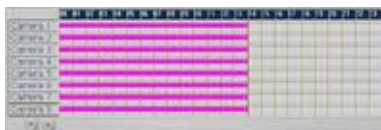
5.2.2. Bookmark



Function to save the images temporarily while the user searches the images. Drag the desired image for backup and bring it to the empty column to save the image temporarily. To save more images, press the arrow button below to move to other screens

To see the saved image, drag the mouse or double click the searched image to see it in 1 screen mode.

5.2.3. Time Position Indication Bar



The recorded images will be shown as time graph. The user can search the time of the image easily from the searched date. Use the mouse to move the vertical red bar from the graph. The time is indicated for 24hours.

Black Color : The recorded image file has password. Enter the password set on the DVR. Enter the password and press [OK] button to recall the recorded images.

Blue Color : Recorded image file with motion detection.

Pink Color : Recorded image file with continuous recording settings.

Click the bar on 0~24 hr from the upper part of the graph and the time can be searched in more detail.

5.2.4. Indicating Date / Time



Indicates the present date and time. The date and time shown here is set from the DVR. In case the date and time is incorrect, set the time from the DVR system's main screen. Time setting changes cannot be set from the viewer.

5.2.5. Search Calendar



Select the date to search the recorded images.
Press arrow button from each category to select the date.

Select Yr/Month/Day/Time and press [Search] button.
Also, click the below calendar to search the date.

The date with recorded images will be indicated in pink color and the present date will be indicated in yellow color.
The date without recorded images cannot be selected.

Press [Prev] and [Next] and the calendar will move to previous and next month.

The recorded images will appear on the searched screen.

5.2.6. Select Split Screen



Split the current recording screen to display 1,4,9,16 cameras simultaneously.
When the number of the split screen mode is more than the actual number of cameras connected to the system, the vacant screen displays the Speco logo.

See an image in detail (1-screen mode)

A particular 4-split screen mode can be instantly enlarged to 1-screen mode for detail inspection by clicking the left side of the mouse twice.
Click image number 3 with the left of the mouse and it will change to single screen. Click the left of the mouse twice and the image will return back to split screen mode.

5.2.7. Playback



Press the button and the searched recorded images can be seen with the audio.

The following is the function for each button.

1. Move to the exact recorded starting point of the corresponding recorded time range.
2. Playback backwards by one frame
3. Playback backwards
4. Pause
5. Playback
6. Playback forwards by one frame.
7. Move to 59mins 59secs of the corresponding recording range.

5.2.8. Adjust Playback Speed



Adjust the slide bar to control the playback speed of the recorded image.
(Supported speed: 1/8~8X) When there is audio recorded, it can be adjusted together with the playback speed.

5.2.9. Adjust Audio Playback



Adjust the audio volume for audio playback. If the volume cannot be adjusted, check the device administrator after ending the program.

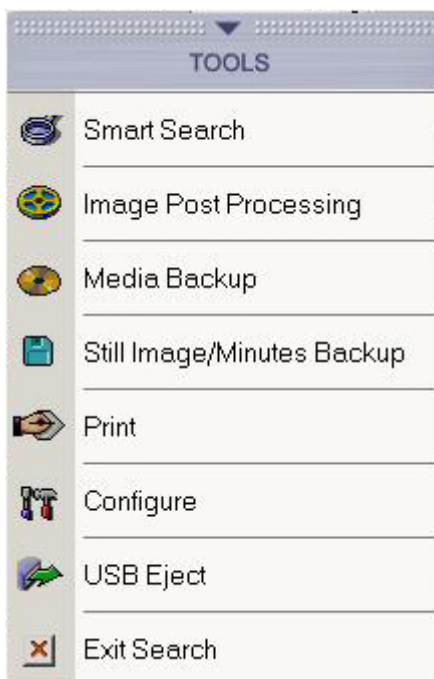
Click the Speaker button if the audio is not required and press it again to allow for audio playback.

The recorded audio can be heard for a screen, 1X mode. That is to hear the recorded audio, select a screen from 1~4 channels and playback the audio by 1X.

When audio is being recorded, the surveillance screen and searched screen will indicate "<A>" on the upper part of the screen to show that Audio had been activated. For DVR-PC8/16 Series, the audio recorded can be corresponding with camera channel no. 1.

Recorded audio playback is being executed at selected 1X mode of 1~9 split modes. It means that you should select channel from 1~9 screen with "<A>" and play it in 1X mode.

5.2.10. Tools



Press the [Tools] button and the menu will appear.

Refer to "Search Tools" part for detail explanations of each menu.

Smart Search

The hour range of recorded images can be searched by seconds, according to the particular motion area selected by the user. It can be searched easily by each date, hour.

APP (Advances Post Processing)

Use Image Post Processing for a still image, among the recorded images to get higher picture quality. Thus, it can be saved or print out as JPG or BMP state with higher picture quality using several filters.

Media Backup

Recorded images can be back-up by CD or DVD.

Still Image / Minutes Backup

Recorded image can be saved by file (bmp /jpg /dsf /mpeg format).

Print

Print out the searched image by connected printer.

Configure

Window will appear to add the printer and to select searched option,

USB Eject

Functions enable to safely remove when USB is connected.

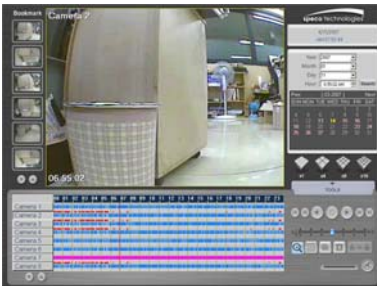
Exit Search

End the searched screen and go back to the main screen.

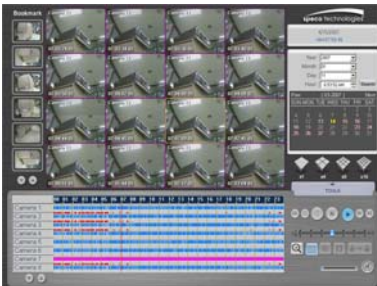
5.2.11. Zoom In/Out



After clicking the button, select the screen for zoom in/out. Click the left button of the mouse and the screen will enlarge. The screen will diminish when the right side is clicked. The users can Zoom In/Out using wheel mouse if installed.

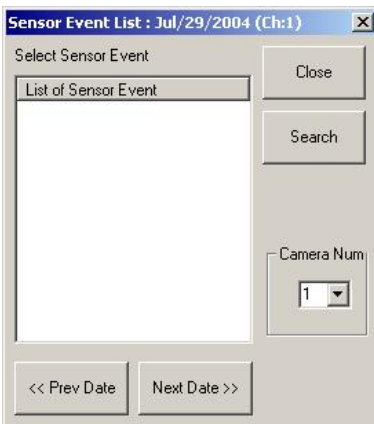


5.2.12. Panorama



This function enables the user to see the selected image by splitting the images by second. First, click [Panorama Function] and select the screen to replay in detail. Next, click [Replay] button and the screen will show as recording screen split by per second.

5.2.13. Sensor Event

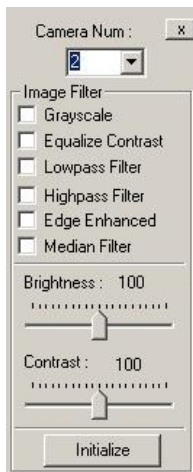


Select recording image when sensor event arises. First, select recorded image button to call up recorded image before using this function.

To search sensor event,

1. Click [Sensor Event] button and execute the Sensor Event category.
2. Date of sensor event category and camera images where the sensor event occurred, will appear in the screen.
3. Select the desired sensor event list and click [Search] button or left button of the mouse twice to see the images where the sensor events have arises.
4. Select the date of sensor event list by clicking [Previous Date] or [Next Date].

5.2.14. Adjust Picture Quality



Click Image Adjust button to adjust the searched screen. Select each functions and it can be seen directly in the searched screen.

1. Grayscale: Make the screen black and white.
2. Equalize Contrast: Equalize the brightness and darkness.
3. Lowpass Filter: Delete high frequency of signal.
4. Highpass Filter: Delete low frequency of image signal.
5. Edge Enhanced Filter: Make the edge clearer.
6. Noise Reduction Filter: Eliminate noise.
7. Brightness: Adjust brightness of the screen.
8. Contrast: Adjust contrast of the screen.

Click [Initialize] button and the image effect set by the user will be cancelled and return to default.

5.2.15. Deinterlace



Removes feathering, which appears in motion detected area recorded in 640×480 in playback. Display method, Odd Field/Even Field/Full Frame, converts in order when this button is pressed. Default is Full Frame (640×480), and feathering is caused at this state. However, by selecting Odd/Even, resolution changes to 640×240 , where vertical resolution is reduced in half, removes feathering.

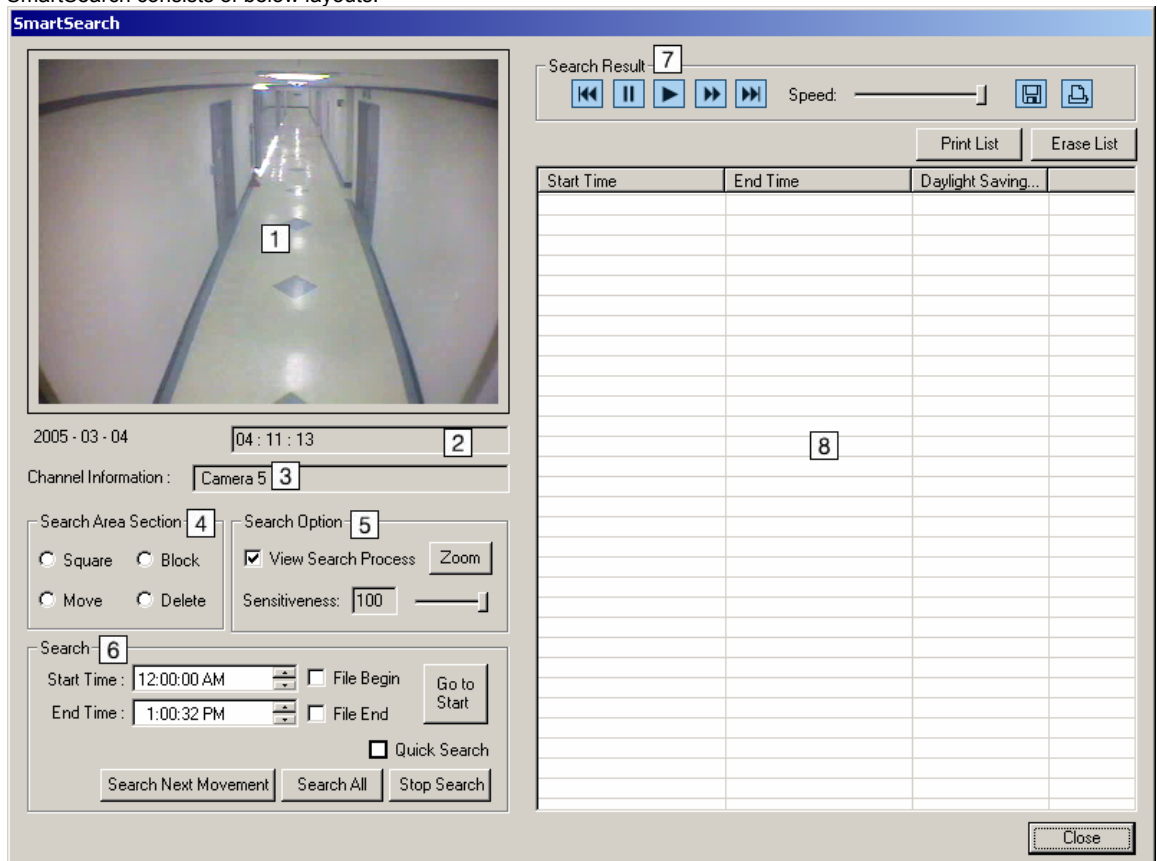
5.3 Search Tools

5.3.1 SmartSearch

How to Use SmartSearch

1. Select the channel desired to search in the Viewer to 1-channel mode.
2. Press the SmartSearch button.
3. The system will require a password if the file you searched for contains a password.
4. Set the time you require. The image for time that you search for will appear if you press the [Go to Start Position] button.
5. Click either [Search Next Movement] or [Search All] after selection.
6. Time for images after search result information appear in the result list.
7. You can see the first picture on the playback screen when you select the time zone.
8. Use the buttons in the "Search Result" to view the results.
9. Click [Close] button to finish the SmartSearch.

SmartSearch consists of below layouts.



No.	Functions	No.	Functions
1	Search / Play-back Window	5	Search Option
2	Currently Searched Date and Time	6	Search Condition Settings
3	Channel Information	7	Search Result Play-back
4	Search Area Section	8	Search Result / Search Result List

5.3.1.1. Play-back Window



The green color represents selected area. You can design searching areas with below buttons to catch up the areas where motion was detected.

This playback window is to play recorded images. You can select either "Search All" or "Search Next Movement" to playback record motion pictures. When playback by selecting from search result list, shows the selected categories.

5.3.1.2. Currently Searched Date and Time



Show the camera channel information for the recorded images.

5.3.1.3. Channel Information



Show the camera channel information for the recorded images.

5.3.1.4. Search Area Section



Square

You can freely select searching area in square shape.

Block

You can design the searching area on pixel basis. (16X16 pixel)

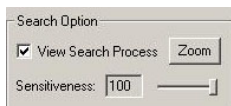
Move

You can edit the size and position of the selected area.

Delete

You can cancel the selected area.

5.3.1.5. Search Option



View Search Process

When you select "View Search process", you can see all the images while searching in the playback window. It may take longer search time. Without the selection, the windows will playback the recorded images by motion detection only.

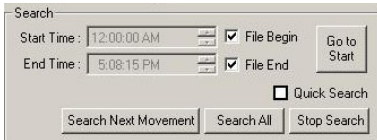
Zoom

You can zoom in and out the played images, or playback the recorded images in either zoom in or zoom out mode.

Sensitiveness

You can set motion sensitiveness from 1 through 100. The larger the number you select, the more sensitive the system will be with a small amount of motion. Normally, put the setting to 100.

5.3.1.6. Search



To start, you can select the starting time. When you select the [File Begin] list, it will search for recorded saved file at present regardless the set up time. To view the beginning of an image before searching, set the start time and press [Go to start] button. Then, the image will appear.

End Time

Select the image files by part. Selecting [File end], the system will search the entire file regardless of present time.

Go to Start

Click [Go to start] button after selecting the time you want in order to preview images in search.

Quick Search

You can speed up the searching speed. When the searching speed is increased, the sensitiveness goes down. This is helpful when you search images, which have been recorded with high frame rate.

Search Next Movement

It will stop searching when it finds the right images through search condition. Then, it will keep searching when you select [Search Next Movement]. Do not use this function without checking the "View Search Process" option.

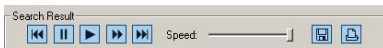
Search All

You can select the beginning through the last part of the file, which has been recorded.

Stop Search

You can stop while searching.

5.3.1.7. Search Result Play-back



You can playback the required image among the searched result list.

Go to Start Position [⏮]

The file will move to the beginning screen of the images, which is being playback.

Pause [⏸]

The image being playback will pause.

Playback [▶]

The selected file will playback. You can control the playback's speed.

Fast Forward Search [⏭]

The selected file can be fast playback.

Go to Last Position [⏮]

The file being playback will move to the last screen.

Playback Speed [▬]

Control the playback speed by moving the slide bar.

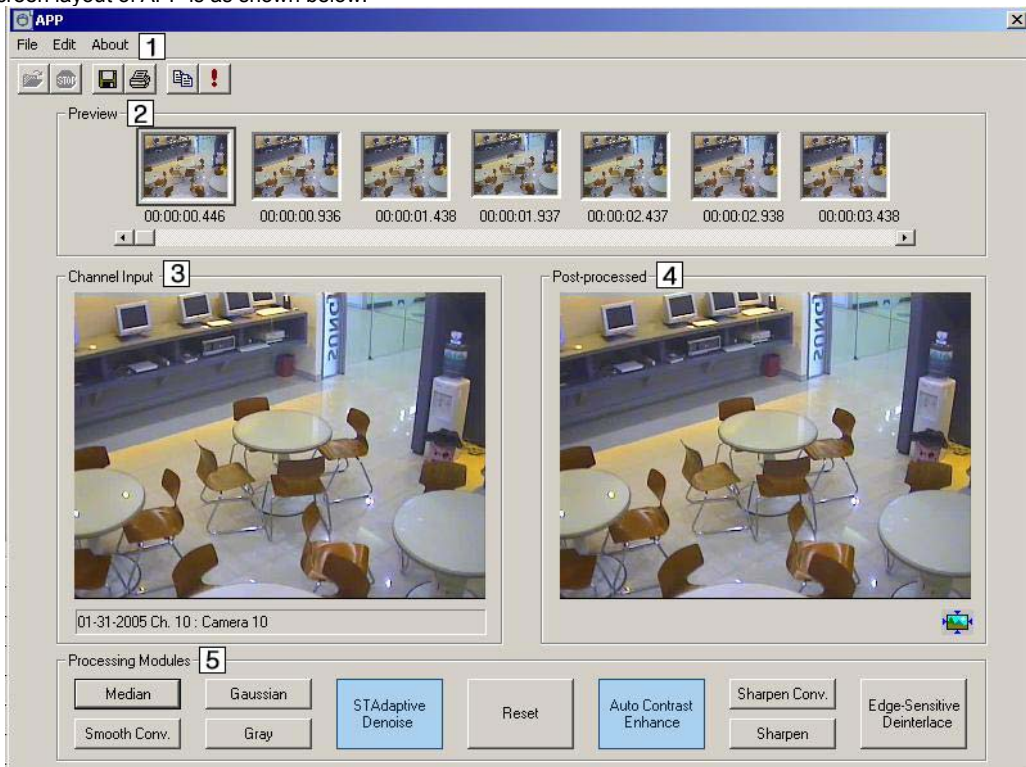
5.3.2. APP

The Basic Method to Use the APP

1. Select the channel desired to process in APP in the Viewer to 1-channel mode.
2. [APP] button is activated when moving to previous hour range by pressing [Search Previous Hour] button in the Viewer.
3. Click the [APP] button.
4. It will ask for file password when the required file has a password.
5. Use the scroll bar to move to the time of images, which needs revising and select the revised images from the "Preview" window.
6. Set the value of the applicable filter by clicking [Option] Button.
7. Among the [Processing Modules] category, click the applicable filter button and the revised image will appear in [Post-processes] window.
8. When the revised image is not of satisfaction, click the [Reset] button first before applying other filter.
9. When the images had finished revising, save or print by JPG or BMP file. The image used in the "Post-processed" window will be saved or printed.

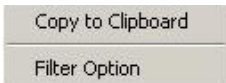
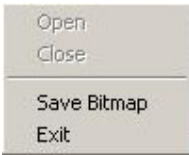
APP Screen Layout

The screen layout of APP is as shown below.



No.	Functions	No.	Functions
1	Menu	4	Post-processed
2	Preview	5	Processing Modules
3	Channel-Input		

5.3.2.1. Menu



File

1. Open File (📁): Used to open up the file. (Deactivated)
2. Close File (🛑): Close the file that is open. (Deactivated)
3. Save Image (💾): Save the images appeared in the "Post-processed" window as JPG or BMP file.
4. Print Image (🖨️): Print out the image appeared in the "Post-processed" window.
5. Close: End APP program.

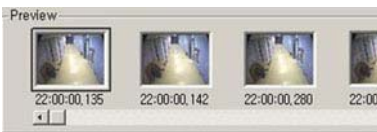
Edit

1. Copy in the Clipboard (📄): Copy the image shown in the "Post-processed" window to clipboard. In other Picture editing program, use "paste."
2. Filter Option (⚠️): Set the option value of various filter. (for details, refer to "Processing Modules" category)

Information

The information for APP program can be seen.

5.3.2.2. Preview



The 7 images can be previewed. Search the location with the scroll bar and the pictures will be updated automatically. Click the revisable image among the 7 images. Then, it will appear in [Channel Input] window and [Post-processed] window by 320 x 240. The numbers shown under each image of the Preview window is the image information.

5.3.2.3. Channel Input



It is the original image of the chosen image, which is shown in the Preview window.

File Information

Show the file information such as date, channel, and title for the file that is open.

5.3.2.4. Post-processed



Shows revised image. The image gets updated whenever the filter is opened.

5.3.2.5. Processing Modules



These are filters to revise the image. They are used to revise the image to get a neater image.

Reset

This is to reset the revised image to the original image. The effect of the applied filter will be gone when the Reset button is pressed.

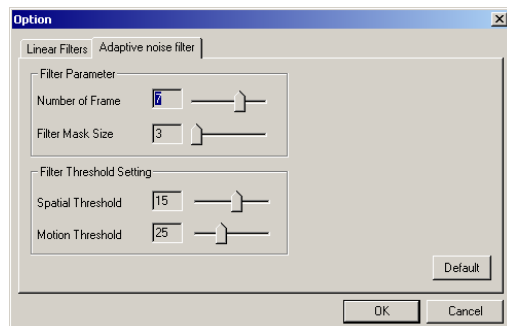
STAdaptive Denoise

It is a filter to improve the chosen image by using the forward and backward images. Its advantage is, it decreases the bluntness that appears in the dark images.

The filter is applied by the following four categories.

1. Number of frame: The picture quality becomes stable and cleaner by increasing it. But the best effect is shown when the value is lower for brighter environment and higher for darker environment.
2. Filter Mask size: The picture quality becomes stable and cleaner by increasing it. But in whole, the image can be less clear.
3. Spatial Threshold: The picture quality becomes stable and cleaner by increasing it. But the detail part of the image will not be easy to differentiate.
4. Motion Threshold: The picture quality becomes stable and cleaner by increasing it. Input low value for the times in bright environment and high value for the times in dark or without movement as an after image can develop for the movements appearing.

Below is the example picture after applying [STAdaptive Denoise].





Auto Contrast Enhance

Increase the color and light intensity of the screen automatically to increase the screen's resolution.

Sharpen Convolution

Increase the resolution by effective to use on images with non-clear objects. The disadvantage is that the picture decreases when it is used excessively. As the setting value increase, the object differentiation will be easier but the picture quality will not be good.

Sharpen

Improve the resolution of the image by emphasizing the object's boundary line. It has a disadvantage of lowering the picture quality as Sharpen Convolution function does. As the setting value increase, the object differentiation will be easier but the quality will not be better.

Edge-Sensitive Deinterlace

It is a function to enlarge the recorded image of 640x240 mode to 640x480 mode. This enlarging method is different from the existing mode. The boundary line is preserved while enlarging so the picture quality is maintained while the size is enlarged. If the image is recorded 640X480, contour of the image can be deviated. This phenomenon appears frequently when the fast motion is recorded. By using this filter in 640x480, deviated contour of the image is fixed.

Median

It is efficient to remove specks/spots or noise in the image. Use the setting value appropriately as the image looks as if it had been drawn with water paint when the setting value is higher.

Smooth Convolution

It is efficient to eliminate noise. It gives more natural feeling Median. But the disadvantage is that, the image will be hazy when the value is too high.

Gaussian

It eliminates the noise in whole. It is similar to Smoothing Convolution but relatively more natural than Smoothing Convolution. The noise eliminating effect is bigger as the setting value increase.

Gray

Change the image to black color.

Real Image View

When viewing the recorded data which recorded by 640x480, there comes



icon at the bottom of right side. You can see the original size of recorded data by clicking this icon.

Note Various filters can be applied together.

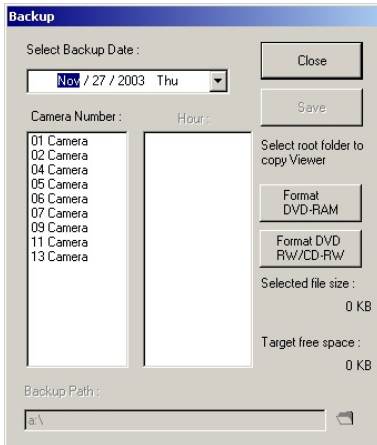
Example,

① [STAdaptive Denoise]→② [Auto Contrast Enhance]→③ [Sharpen], better picture quality can be get from the revised image.

※ [Edge-Sensitive Deinterlace] filter and [STAdaptive Denoise] filter can not be applied together.

Furthermore **apply these two filters first** before applying other filters when there is a need to apply other filters together with these two filters. When these two filters are applied later, they will be applied to the original image and the filters applied previously will be canceled.

5.3.3. Backup



Select the time and save the image in the backup device. These files can be called up in the normal PC (window based).

Note Backup device supported by the viewer are CD-RW and DVD-RW, and USB for the interface. To add additional backup device, inquire from the buyer or dealer.

To backup the recorded file,

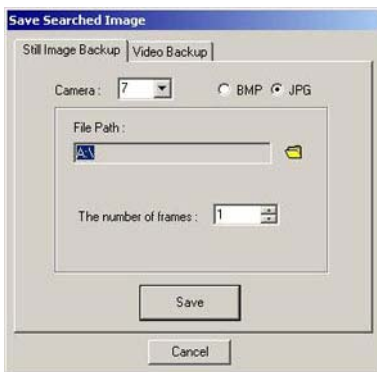
1. Click the 'CD backup' button in the main screen of the viewer. A box will appear to set desired date, camera number, time and backup path.
2. Select the desired date, camera, and time in order.
3. Set the backup path by clicking the [Folder] button.
4. Save the recorded file by clicking [Save].

Note Select several cameras or time ranges at the same time and the color of the background will change and they will be selected. Press once more on the time ranges and the selection will be disabled.

The saved images recorded by "Backup" can be recalled on normal PC (Window series), with the corresponding media installed.

If it is backup to a CD by DSF file, the Viewer to see the DSF file will be exported also. Run the backup viewer in a PC and the saved file can be viewed.

5.3.4. Save Searched Image



Still Image Backup

Save and store images continuously from the current search screen in JPEG/ BMP format on Dumbdrive , CD-R or DVD. The BMP format has better picture quality but has bigger capacity than JPG. The user can choose one of the two formats to save.

To save the searched screen in images,

1. Search recording image.
2. Click [Pause] button to replay the saved screen.
3. Click [Still Image Backup].
4. Image box will appear to set Still Image Backup path.
5. Select camera number of the screen to save.
6. Select the saving method (BMP/JPG).
7. To indicate the save path, click the [Folder] button.
8. Click [Save] button to save the image.

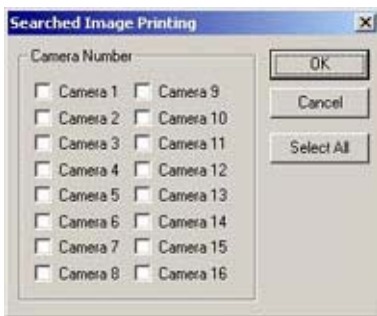


Video Backup

To save image by Partial Image Backup,

1. Search recording image to save.
2. Click [Pause] button after searching recorded image.
3. Select Partial Image Backup tap.
4. Select the camera number of the screen to save.
5. Choose a saving method (DSF, MPEG).
6. Select the path to save the file. You can save data by selecting FDD, removable disk, external disk drive or flash memory.
7. Select the time to save.
8. To save in the FDD, select "Fill up FDD with image file". When the image is more than the disk capacity, save them on several disk. When the setting is finished, click [Save] button.

5.3.5. Printing

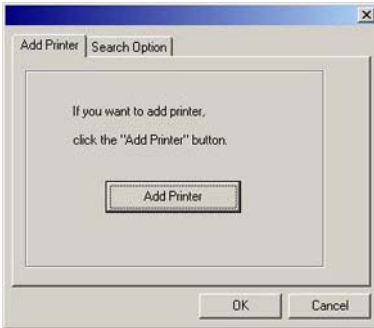


To print the searched screen,

1. Check whether the printer is connected and the power is on.
2. Select the camera number of the image to print.
3. Check the print image in the print preview.
4. Click [Print] button. Or click [Close] button when printing is not required.
5. Press [Select All] button to print out the image of the entire channel. The entire connected channel will be selected at once.



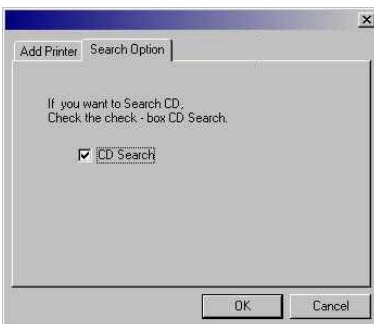
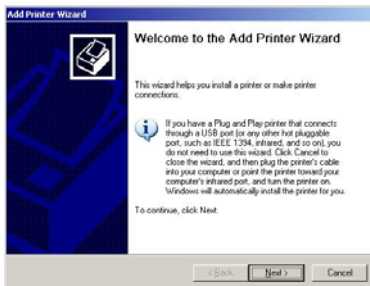
5.3.6. Configure



Add Printer

Click [Add Printer] button to install new printer.

1. Click [Add Printer] button to use the [Add Printer Wizard] to add the new printer.
2. Select printer location. Select local printer when the printer is directly connected to the DVR.
3. Select the manufacturer and model from the menu. If your printer came with an installation disk, click [Have Disk].
4. Follow the instructions on the screen. After the printer is installed, print out a test page to confirm the proper set up of the printer.
5. After completing the installation to add printer, go to DVR setting and click the [System Backup] on the upgrade tap for Backup.



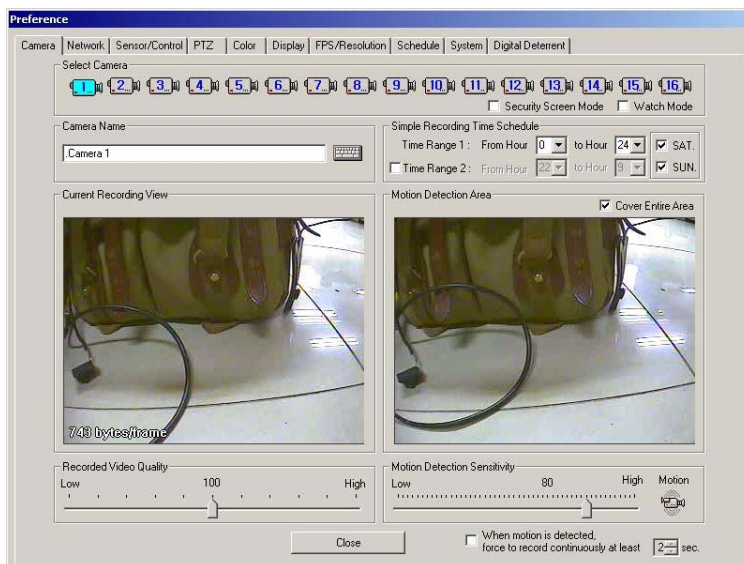
Search Option

Select "CD Search" to search backup images on the CD. Only used when the Viewer is started from other computer after CD backup from the DVR.

6. Setting Customized Functions

Press the [Setup] button on the system's main screen and various functions for the system can be set on the Preference Window comprised with 9 tabs.

6.1 Camera Setting



6.1.1. Selecting Camera



Select a camera for desired time, motion detection range, image quality, resolution, motion sensitivity, etc.

6.1.2. Select Security Screen/Watch Mode



Security Screen Mode

When the Security Screen Mode is checked, the selected camera displays Speco Technologies logo on the screen, and the channel title displays "Security Mode" to show that Security Screen Mode is operating.

Watch Mode

When the Watch Mode is checked, the system will not record any images.

6.1.3. Camera Location



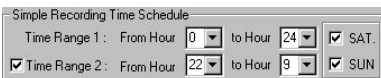
Enter installing location of the selected camera. Click on the keyboard icon to display virtual keyboard screen. Click the virtual keyboard screen with the mouse to input camera location.



Input dot (.) in front of the title. Then, the channel number of the title will not be seen in the main screen.

For example, input ".B/D Side" is input; the screen will appear as "B/D Side" in the screen. When only "B/D Side" is input, the screen will appear as "1. B/D Side".

6.1.4. Simple Recording Time Schedule



Time Range 1

Select the recording time of images from the selected camera.

For example, select from 0 to 24 hour and the recording will resume continuously for 24 hours. When 0 to 12 hour is selected, the images record for the first 12 hours and stop recording for the next 12 hours.

Whenever the installed sensor detects any motion, recording resumes will even during the off-recording time.

(Refer to "Recording Schedule" for more detailed information)

Time Range 2

To select another recording time other than the recording time selected in Recording Time 1, checkmark the box in front of Recording Time 2 to select the time.

For example, when the Recording Time 1 is selected from 9 to 18 hour and when the second recording time frame from of 20 to 24 hours is desired, checkmark on the Recording Time 2 and chooses between 20 to 24 hours time frame.

Weekend Recording Function

Select Saturday and/or Sunday to record.

When recording is not required on either Saturday and/or Sunday, turn off appropriate checkmark.

For example, to record on Saturday and not on Sunday, set up as following picture.

6.1.5. Current Recording View



Recordings of images from connected CCTV cameras are displayed on the current recording view.

The [**bytes/frame] shown on the left bottom of the picture is the file size of a frame (1 screen page). With this file size, the user can roughly calculate no. Of hours that can be recorded into the hard disk.

6.1.6. Motion Detection Area



Motion detection area can be selected on the motion detection area screen after the checkmark on the "All Ranges" selection is turned off.

1. Click the left mouse once: One field box is created.
2. Click left mouse and drag: Field box is created following the direction of the drag.
3. Click the left mouse twice: The whole area in the chosen box is created.
4. Click the right mouse once: Disable one of the selected boxes.
5. Click the right mouse twice: Disable the entire selected box.

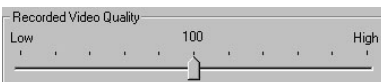
When the selection is made, any movements in the selected range will be recorded.

Note Recording is not supported if you don't configure the motion detection area after disable "All Ranges" setting.

Cover Entries Area

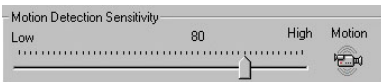
When all ranges are selected, any motion detected in the entire screen is recorded. The all ranges are set as default.

6.1.7. Recorded Video Quality



Use the slide bar to control the setting value for clearer recording image. (Recommended recording picture quality: 100)


6.1.8. Motion Detection Sensitivity



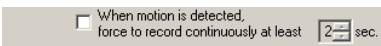
Motion sensitivity of the images can be adjusted by using the slide selection bar. We recommend users to record smaller movements with higher sensitivity level. (Default: 80)

Continuous recording []

DVR is always in continuous recording.

When the camera shape button () is pressed, the images will be recorded whether there is change in the image or not. Thus, if it is on, the Motion Detection Sensitivity will not be used.

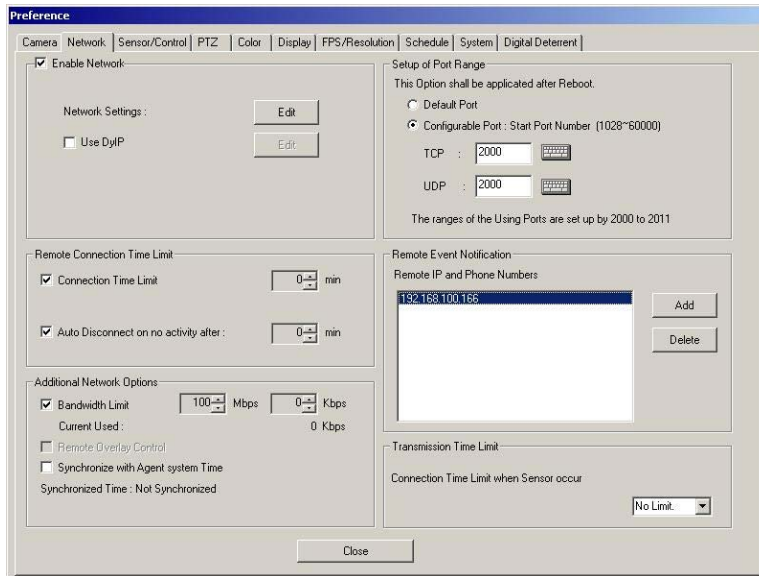
6.1.9. Motion Recording



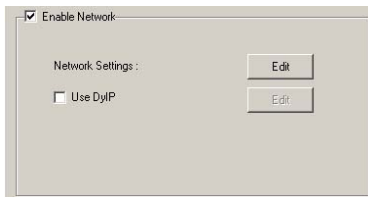
When motion is detected, Recording will be proceeded in the period of given time set up

6.2 Network

In this section, the selections for the Internet, user ID and other options are selected to transmit images using Agent Series remote distance surveillance system.



6.2.1. Enable Network



Network Setting

Click the [Edit] button and the Internet settings screen will appear. Input required information as requested.

Dynamic IP

IP Address might be changed under 'automatic IP' environment. This function helps to connect DVR by unchangeable MAC Address using additionally installed Dynamic IP Server which is independent from IP change. Fixed IP Address is required In case of Dynamic IP Server. DVR automatically allocate IP and sends this IP and MAC Address periodically to the Dynamic IP Server. Agent connects to DVR through dynamic IP Server using MAC Address. Select 'Use DylP' box and click 'Edit' Button to call up 'DylP server IP (211.202.3.176)' setting window.

Network Adapter

Select the present network card attached.

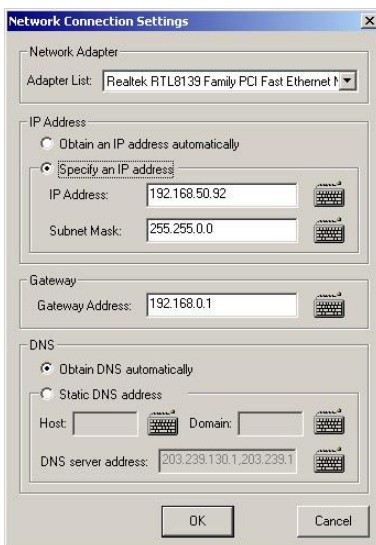
IP Address

Input the IP address used in network setting. Select "Obtain an IP address automatically" and it will be automatically allocated in the OS. When the OP address is automatically allocated in the OS, the DVR cannot be connected to the RemoteAgent.

Select "Specify an IP address" and an IP address will be selected automatically. Click the keyboard, which is beside the box to input the OP address. Then, input the address in the virtual keyboard that appears.

Gateway

Input gateway address when it is needed.



DNS

Input DNS setting when it is needed.

Press [OK] button after completing all the settings to apply.

6.2.2. Remote Connection Time Limit

Remote Connection Time Limit

Connection Time Limit min

Auto Disconnect on no activity after : min

Connection Time Limit

Select "Connection Time Limit" to limit the connection time with Agent Series. The time limit can be set up to maximum of 120 minutes. For example, to connect and transmit images through Agent Series for only 30 minutes, select "Connection Time Limit" and set 30 minutes. When 30 minutes have been passed, the Agent automatically disables connection.

Auto Disconnect on no activity after

To stop the transmission within the pre-selected time limit when there is no response due to transmission errors, select "Auto Disconnect on no activity after" and select the desired time limit. The maximum time limit can be set up to 20 minutes.

6.2.3. Additional Network Options

Additional Network Options

Bandwidth Limit Mbps Kbps

Current Use : 477.07 Kbps

Remote Overlay Control

Allow time Synchronization

Synchronized Time : Not Synchronized

Bandwidth Limit

Select this category to limit network transmission speed. The user can temporarily select bandwidth. Number displays current bandwidth setting.

Remote Overlay Control

Control the live images in RemoteAgent remote controller. Detailed information settings cannot be used in DVR while controlling the live images in the RemoteAgent.

Allow Time Synchronization

The RemoteAgent remote controller sets the time of the DVR to be same with it. The DVR can use the remote notification category to set the time in the RemoteAgent. So, the RemoteAgent must be registered in the remote notification category to have the same time with the DVR. The RemoteAgent transmits the time of the RemoteAgent to the DVR in intervals.

Time Synchronization

Synchronize DVR time with RemoteAgent. If there is RemoteAgent which designed to be Time Server in same network, it synchronizes time of DVR once in a day(AM 03:00).

6.2.4. Setup of Port Range

Setup of Port Range

This Option shall be applied after Reboot.

Default Port

Configurable Port : Start Port Number (1028~60000)

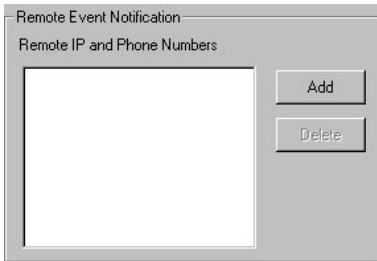
TCP :

UDP :

The ranges of the Using Ports are set up by 2000 to 2011

TCP and UDP number can be changed between "1028-60000". The basic set up uses Default. It is necessary to reboot after changes

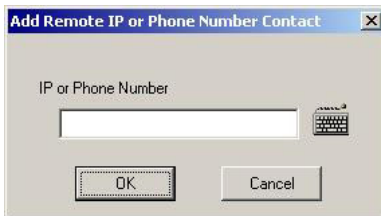
6.2.5. Remote Event Notification



Allow notification of events to RemoteAgent. DVR can notify to RemoteAgent even though it is not connected.

-
- Note** Following events are notified to the RemoteAgent.
1. During sensor event (notifies event or connects channel)
 2. Stop/start recording
 3. Abnormal camera input
 4. Turn off or Shutdown(Power Off)
 5. Rebooting by any other reasons

To get notification, the RemoteAgent must be under operation.



Add

IP input box will appear when [Add] button is pressed.

When the keyboard appears in the screen, enter additional IP address.

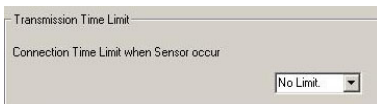
Click the [OK] button and it is added to remote notification category.

DVR only notifies the Event to the RemoteAgent, which is in the Remote Notification category. Add RemoteAgent IP to Remote Notification category to observe the DVR with RemoteAgent. Maximum of 10 can be added in the category.

Delete

Select the desired user name on the list and click [Delete] button to delete the user name.

6.2.6. Transmission Time Limit

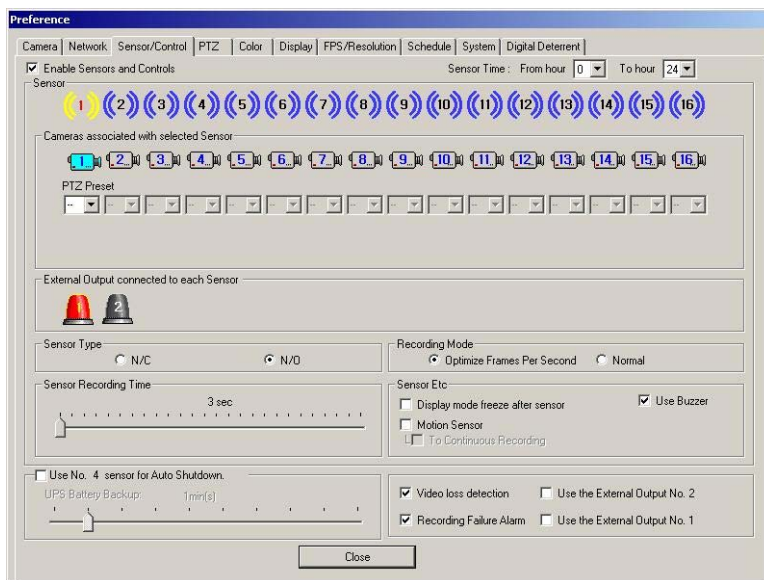


To limit the image transmission time after sensor activates.

If the image is not transmitted within the set time, the transmission will be stopped automatically.

6.3 Sensor/Control

In the preference tap, set connecting camera to the Sensor and set the sensor for External Output with various other output.



6.3.1. Enable Sensors and Controls

Enable Sensors and Controls

Select this function to use the sensors and controls.

6.3.2. Sensor Time

Sensor Time : From hour 0 To hour 24

Select desired sensor operating time. The default time is set as 0 to 24 hour. To use this category, turn off "Recording Schedule→Use Schedule".

6.3.3. Select Sensor



Select sensor for setting.

Cameras Associated with Selected Sensor

Select the camera to be associated to the installed sensor. Multiple cameras can be connected to a single sensor. Activate sensor by clicking the desired sensor with the mouse. Then, select the camera number for the connecting sensor.

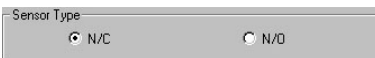
PTZ Preset

To set the Preset location of the camera, assign the number at the bottom of the camera.

External Output connected to each Sensor

When sensors detect any motion and are connected to a pre-selected alarm, the alarm can be automatically triggered. When there is intrusion, the sensor will be detected and the alarm output port will automatically halt. Select sensor and camera. Then, select the alarm output port to use. The connected alarm output port in the P series will be shown as activating and the chosen alarm output port will change to red color.

6.3.4. Sensor Type



Select the type of sensors to be preset on alarm from the N/C (Normal Close) or N/O (Normal Open). Only one type can be selected.

6.3.5. Sensor Recording Time



Sets the preset duration for recording time when a sensor is triggered.

Maximum recording time is 5 minutes. When the preset recording time is up, the recording of images detected by sensors halt and the system returns to the previous recording mode until the sensor is triggered.

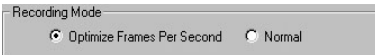
6.3.6. Use No.4 sensor for Auto Shutdown



In case the power supply fails, the Auto-Shutdown functions and the system shut down safely. The user can set up when the use the Auto-Shutdown (UPS battery backup time) during the discontinuous of power supply. Inquire from the place of purchase for the UPS used.

For example, when the UPS battery is set for 1 minute, the system shut down safely after power supply excess 1 minute.

6.3.7. Recording Mode

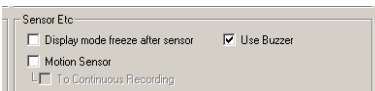


When you want to record only the images on sensor-detected camera in full frame speed instead of the current recording images at the standard frame rate while the sensor is activated, choose “Optimize Frames Per Second”. When you want to record both current images and all images on sensor-detected camera, choose “Normal”.

Note Optimize Frames Per Second:

Records with the maximum speed of product system, without regard to the present record setting

6.3.8. Sensor Etc



Display mode freezes after sensor

When a sensor corresponding to a selected camera detects any motion, the system automatically display the images from the camera for the duration of the preset “Display Mode Freeze after sensor,” regardless of the display mode selected. When the recording time is up, users can manually select either to keep sensor display mode or return to the original display mode. Click on the current recording screen when you want to return to original display mode.

Sound Use

Users can manually select this function to use sound when Check sensor activates.

Motion Sensor

When the motion sensor is selected, alarm will trigger when the motion is detected.

Select the sensor and the camera of the image desire to detect when using the “Motion Sensor”.

Users can manually select the use of relay function.

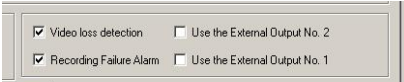
Note “Motion Sensor” may not be supported depending on the product.

To Continuous Recording

When continuous recording is selected, it will continuously record while motion sensor is activating.

After motion sensor stops, recording mode will be changed to previous menu.

6.3.9. Video loss Detection



Video loss Detection

Select this category and the screen title will appear as “Video loss” when the camera cable is disconnected or cut. The alarm time will follow Sensor Recording Time.

Recording Failure Alarm

Turn on sensor output Number 7 (located second to the end) from internal system while the recording activity is normal at the system. This function turns off the Relay when a problem occurs or the recording stops.

Use the External Output No.2

Configure this function when there is Video loss.

Recording Failure Alarm

Reboots the system after warning alarm if the DVR fails to record.

Use the External output No.1

When System is recording it turns on Relay No.15. This function turns off the relay if there is any problem with record.

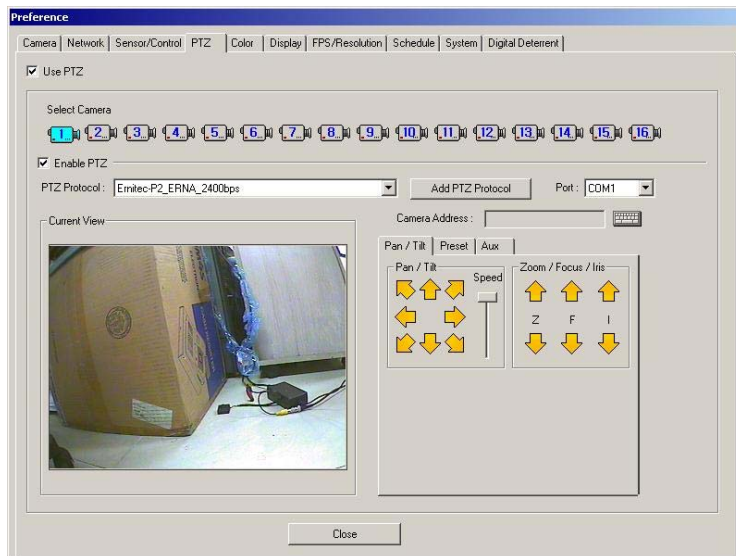
When user manually stops the recording, the alarm doesn't activate.

No.15 Relay can't be used with other functions while using it as an External output.

Note Numbers can be changed by the number of camera channels.

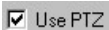
6.4 PTZ

This setting tap is for camera control.



Note The manual may differ because the control functions vary between the manufacturers or by the products used. The manual provides the standard model.

6.4.1. Use PTZ



Select this category to use the camera controller for Pan (left right) / Tilt (up down). To activate the installed PTZ, select this category and the camera controller will be prepared automatically. This category is not selected in default.

6.4.2. Select Camera



Select the desired camera to control. Several cameras can be selected for a controller. Selected camera will change to blue. Click once more and the selection will be disabling

6.4.3. Enable PTZ



Click on this check box to enable PTZ functions.

6.4.4. PTZ Protocol



Click the down arrow button and PTZ protocol list will appear

6.4.5. Add PTZ Protocol

Add PTZ Protocol

Port : COM1

To install new camera protocol, select "Add PTZ Protocol"

Port

Select the port to install PTZ protocol. Selectable port appears when arrow button is pressed.

6.4.6. Current View



Show the current viewing screen of the chosen camera. See this screen to control the location of selected camera.

6.4.7. Camera Address

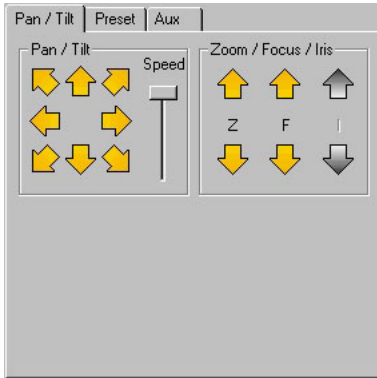
Camera Address : 


Click on the keyboard to input the suitable controller number according to the controller type. Maximum of 255 numbers can be set for controller number. The controller number in the actual controller should correspond with the selected camera number.

To operate camera control functions,


1. Set the type of camera protocol.
2. Select the desired camera to control.
3. Select Enable PTZ.
4. Input the Camera Address using the keyboard.
5. Control the camera location by using Pan/Tilt buttons.


6.4.8. Pan/Tilt




: Click on the up arrow button to Tilt the camera in upward direction until the desired angle is reached.


: Click on the down arrow button to Tilt the camera in downward direction until the desired angle is reached.

: Click on the left button to Pan the camera left until the desired position is reached.


: Click on the right button to Pan the camera right until the desired position is reached.

: Click on the diagonal arrow buttons to move the camera to each position.


Zoom In

Click on the up arrow button () to gradually enlarge the size of image on the screen. When the image is enlarged to an ideal size, release the button.


Zoom Out

Click on the down arrow button () to gradually reduce the size of image on the screen. When the image is reduced to an ideal size, release the button.


Focus Near

Click on the up arrow button () to focus in the image in the closest point from the preset camera position.


Focus Far

Click on the down arrow button () to focus out on the image in the furthest point from the preset camera position.

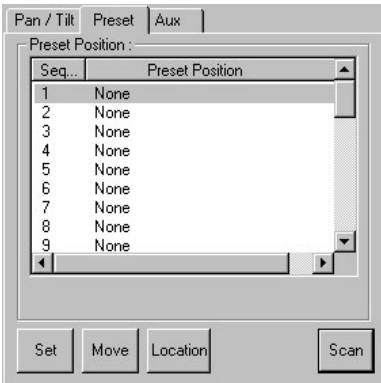
Iris Open

Click on the up arrow button () to open the iris.

Iris Close

Click on the down arrow button () to close the iris.

6.4.9. Preset



Automatically moves the camera to a preset position. The preset position is the combined settings of pan, tilt, zoom and focus

Set

Set current camera position in memory.

Move

Move the camera to the currently selected camera position.

Location

Enter the installed location of current camera.

To input camera position in memory,

1. Use the Pan/Tilt functions to control the camera position.
2. Select the desired number from preset position menu for new setting.
3. Auto Preset Button by pressing [Set] button.
4. Input the present location by pressing [Location] button.

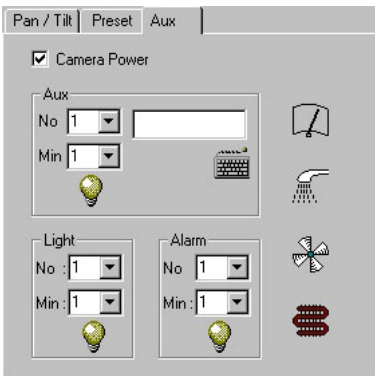
To use preset camera location,

1. Select the location to move in preset position.
2. Move to the location by pressing Preset [Move] button or by clicking the item of the selected category with the left mouse.

Scan

Rotate the currently memorized camera location in PAN sequence.

6.4.10. Exterior Equipment



The exterior equipment icon will not appear when the function is not supported by protocol

Camera Power

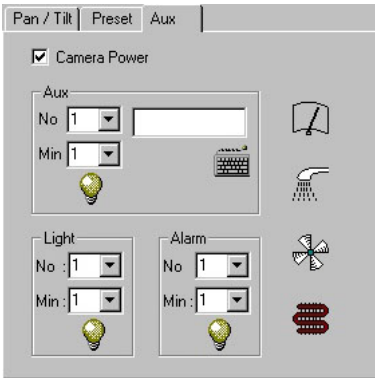
The camera power can be turned on or off by checking/un-checking Camera Power.

Aux

When any of the accessories are installed to a camera (such as siren), choose the number corresponding to the accessory used and enter the desired preset operating time. Then, click on the Aux. Icon. The selected accessory will operate for the duration of entered preset time and automatically shut off when the preset operating time expires.

Registered Accessory Information

Register or modify information on each currently installed accessory. Click on the accessory's number to view registered information on the accessory.



Light

The exterior light will be kept on for the duration of entered preset time and automatically shut off when the preset operating time expires.

Alarm

The alarm will be kept on duration of entered preset time and automatically shut off when the preset operating time expires.

Wiper

To operate an installed wiper, press on the Wiper icon.

Pump

To operate an installed pump, press on the Pump icon.

Fan

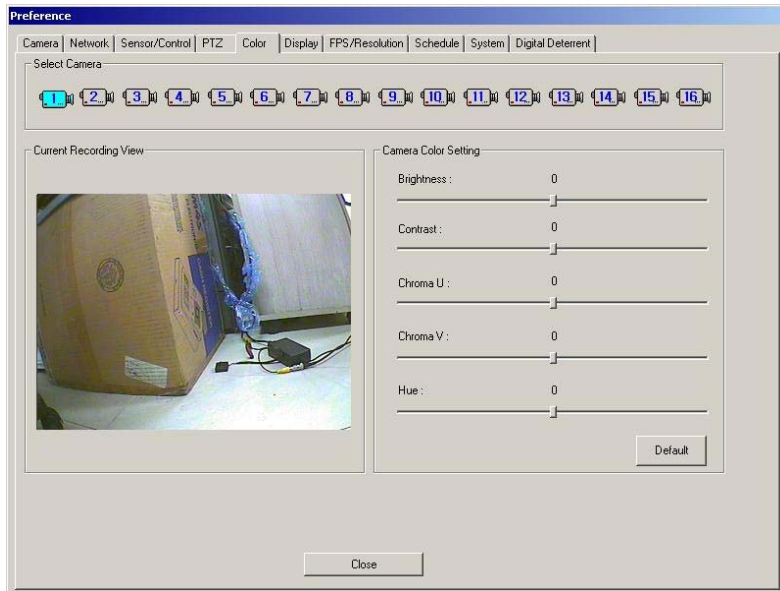
To operate an installed fan, press on the Fan icon.

Heater

To operate an installed heater, press on the Heater icon.

6.5 Color

Video Input Signal Adjustment allow users to individually adjust camera's color brightness, contrast, Chroma U, Chroma V, and Hue for the adjustments.



6.5.1. Select Camera

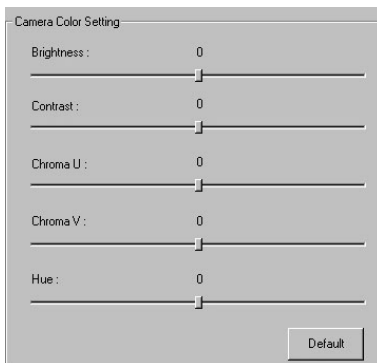


Selected camera icon will highlight blue.

6.5.2. Current Viewing Screen

Displays the screen of the selected camera.

6.5.3. Camera Color Setting



Setting value is from -100 to $+100$.

Brightness

Adjust Brightness of the currently selected camera.

Contrast

Adjust Contrast of the currently selected camera.

Chroma U

Adjust Chroma U of the currently selected camera.

Chroma V

Adjust Chroma V of the currently selected camera.

Hue

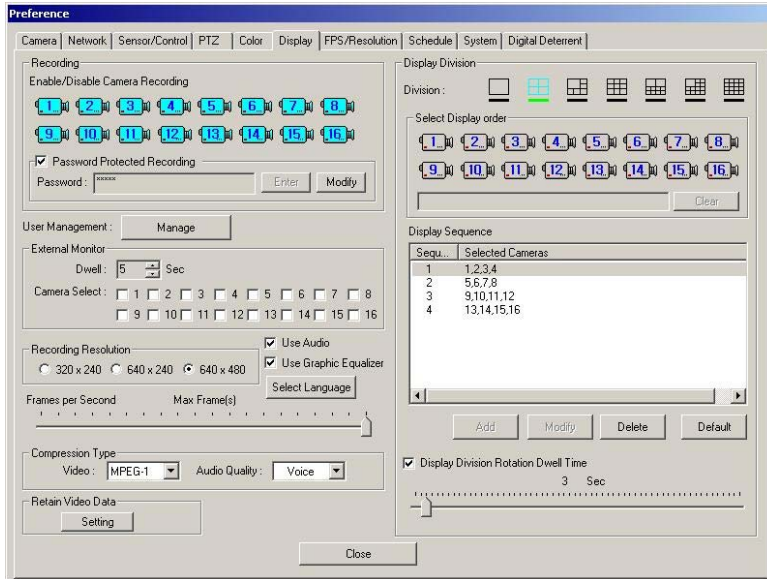
Adjust the Hue of the currently selected camera.

Default

Return the currently selected camera's color tone to default settings.

6.6 Display

Setting for each recording channel, sequence and password is done in this menu.



6.6.1. Recording



Enable/Disable Camera Recording

Not all the installed cameras can record. Only the selected cameras can record images.

Note The installed cameras that are either not connected to the system or without power are shown grayed out.

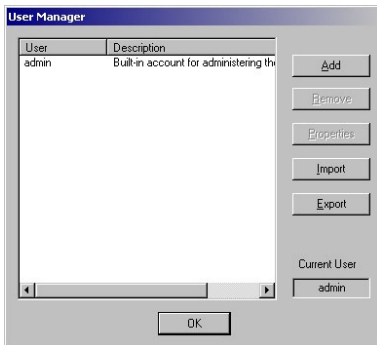
Password Protected Recording

Save password on recorded image. The user can encode password while opening up the recorded image. The encoded password has to be inputted in the Agent Series to view the recorded image.

6.6.2. User Management



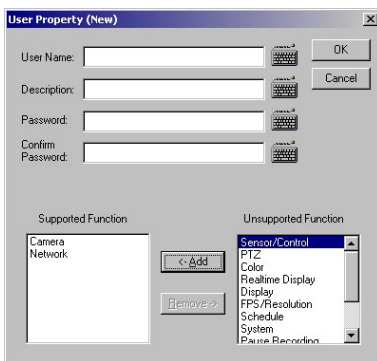
Set up the login and password when logging into the main menu. By clicking [Manage] button, window to set up the user name and password appears.



The system users can be managed by selecting [User Management] button. The administrator (admin) set as default can add, edit, remove other users or give authority to functions to each user.

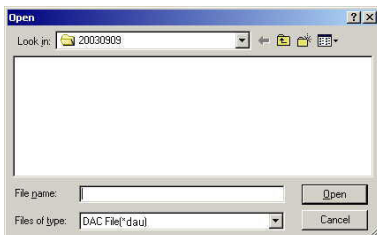
Add

1. User Name: Enter user name.
2. Description: Enter necessary descriptions of the user.
3. Password: Enter user password.
4. Confirm Password: Confirm the password once again for check up.
5. Supported Function: To give authority, select the function in "Unsupported Function" presses the [Add] button to add into the "Supported Functions".
6. Unsupported Function: Limiting the user from using particular functions. The user cannot use the functions, which are in the unsupported function column.



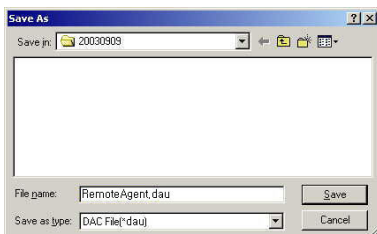
Remove

Select a user to delete and click [Remove] button. The "Admin" cannot be removed.



Import

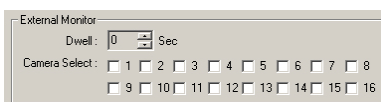
Call up the user category which is made up of UserList.dul file.



Export

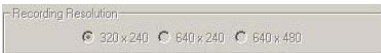
Call up the user category which is made up of UserList.dul file.

6.6.3. External Monitor



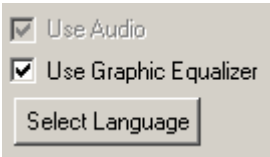
Use this when you want to use additional TV monitor other than PC Monitor. On TV monitor It automatically changes the channel of vision which is connected to camera.

6.6.4. Recording Resolution



Shows the present recording resolution size set among “320×240”, “640×240”, “640×480” mode. To adjust the recording resolution, stop recording first.


6.6.5. Audio/Graphic Equalizer/Select Language.



Use Audio

User can On/Off the audio recording.

Use Graphic Equalizer

User can Enable/Disable the Main Equalizer ().

Select Language

User can select the language they prefer. System will be rebooted if user changed the language setting. It supports 12 languages.

6.6.6. Frames Per Second



Set the recording frame rate per second by using the slide bar.

This function becomes ‘disabled’ while selecting ‘FPS/Resolution’ settings for each cameras.

6.6.7. Compression Type



Video Compression

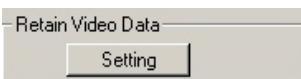
User can select compression type (MPEG-1 or MPEG-4). Select MPEG-4 to decrease data size and improve image quality, but frame rate is reduced half of MPEG-1. For example, selecting MPEG-4 in 120fps system allows recording in 60fps.

Audio Compression

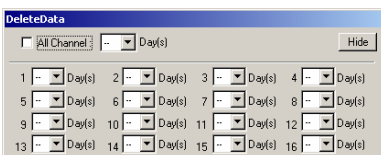
User can select Voice, AM, FM Audio quality.

This function might not be supported depends on system features.

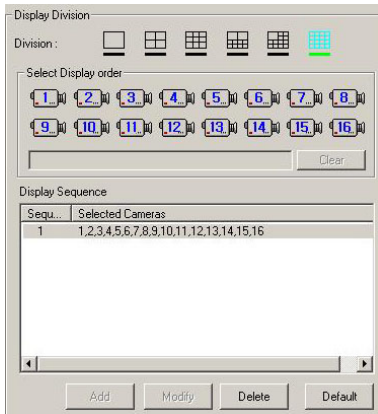
6.6.8. Data Keeping Data



User can select image storage period by each channel. The box for channel selection appears when [Setting] button is pressed. Select the storage period by each channel. To select all channels, select [All Channel], and then set the period. To select different time period for different channels, select storage period by pressing arrow button next to the number. By selecting storage period to 1 day, it will be applied the following day.



6.6.9. Display Division



Select a screen mode from 1, 4, 9, 10, 13, 16-split mode.

Camera Sequence Selection

Select the order of display cameras. The orders are different according to a recording screen mode selected.

To select 4-Split Screen Mode

Select 4-screen split mode, decide the sequence to show the camera group.

For example, 8 cameras are installed and in 4-screen mode, the cameras are grouped as 1, 2, 3, 4, 5, 6, 7, 8 as the second group.

Select camera 1 and the cameras in the group will be selected. After deciding the sequence of 2 groups, the time will change to the time set in "Alternation Mode Time."

Clear

Cancel the selected order of cameras to be displayed. By using the [Clear] button, a selected order with an error can be easily deleted.

Display Sequence

When selecting the display order, click [Add] button to see the selected display order schedule on the current recording screen.

Add

The currently selected display order is added to the "Display Order". When added to the schedule, the order can be modified.

Modify

To change the display order selected, select the order in the display order schedule to modify the order.

Delete

Delete unnecessary schedule. All the schedules cannot be deleted and at least one schedule category has to be in the list.

Default

Return to the default setting.

6.6.10. Automatic Alternation Mode



Select "Display Division Rotation Dwell Time" and select alternation time by sliding the selection bar. Automatic alternation mode displays images from each camera in rotation according to the selected options on the current recording screen.

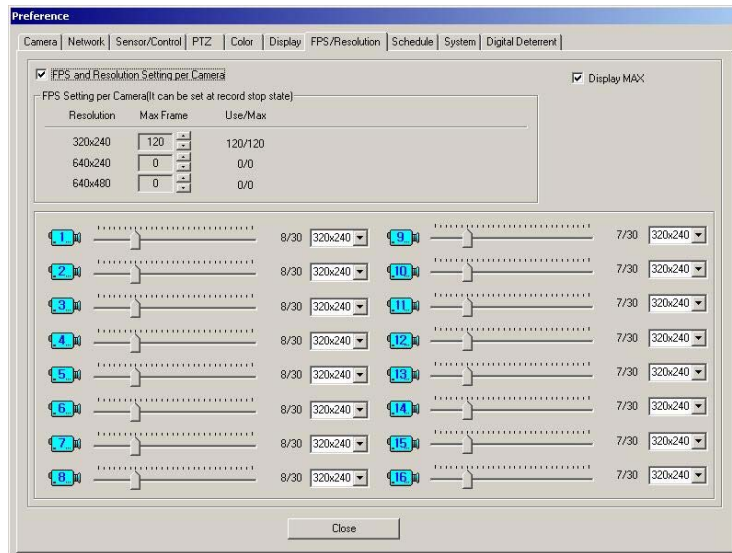
For example, to set Automatic Alternation Mode when 4 cameras from 1 to 4 have been installed,

1. Select a desired split-screen mode from the recording display mode (choose 1-screen mode).
2. Select the camera sequence of the 4 cameras. Set the cameras into 4 sets like 1→2→3→4. First, select camera 1 with the mouse. Then, the camera 1 will change in color.
3. Click [Add] button.
4. Secondly, select camera number 2.
5. Click [Add] button.
6. Thirdly, select camera number 3.
7. Click [Add] button.
8. As the method above, set the camera number 4 and add in the "Display Sequence".
9. Select "Display Division Rotation Dwell Time".
10. Set the alternation time to 3 seconds by using the slide bar.
11. Click [Close] button to close the Setup box.

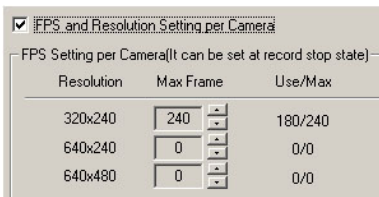
Now, the DVR current recording screen mode will change to a 1-screen mode. The first set of camera "1" is displayed on the screen followed by the next set of camera "2" in 3 seconds. The third set camera "3" is respectively displayed in 3-seconds intervals. Lastly, the fourth set camera "4" after 3 seconds. This shows that the 4 sets of 4 cameras are displayed on the current recording screens at a 3 seconds interval.

6.7 FPS/Resolution

Adjust the frame for each channel of the DVR with this menu. (On the DVR-PC8/16 Series, recording frame setting can be adjusted but it does not support resolution setting per camera.)



6.7.1. FPS and Resolution Setting per Camera



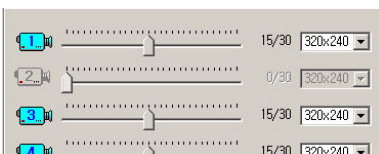
To use this setting, the recording should be stopped.

FPS Setting per Camera

The setting cannot be higher than the total recording frame setting value of all the cameras.

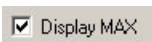
Ex) In case the model used is of 240fps and 1~8 channels are set as 20fps each, the total setting value for 9~16 channels cannot be over than $240 - (20 \times 8) = 80$ fps.

6.7.2. System Recording Performance



Move the slide bar of each camera to set the frames. The maximum recording frame rate per camera is 30fps. In case the frames do not go up after certain value; it means the maximum frame has already been exceeded. The maximum frames of the system differ according to the selected recording mode. (Refer to Recording Setting)

6.7.3. Display Max

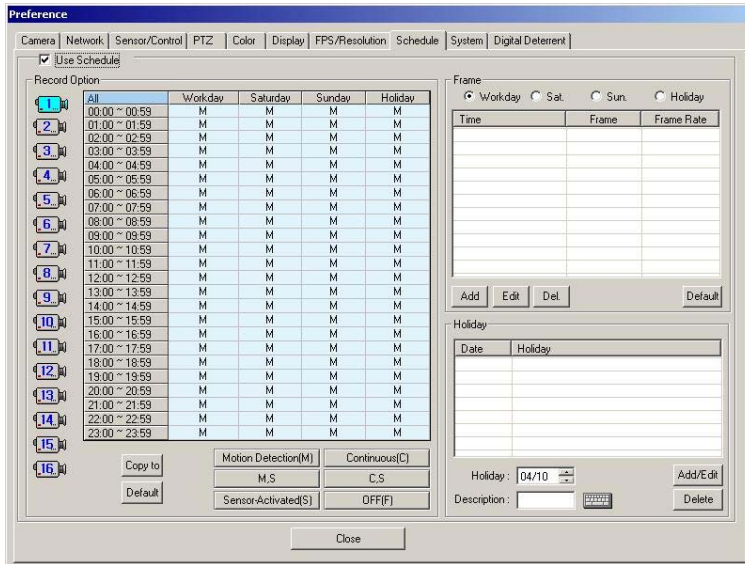


This feature allows the system to maintain to the speed for monitoring possible to capture in DVR-PC8/16 series, which the Recording speed and monitoring speed are same. User can view the best quality image when this feature is selected since the recording speed is set low even though monitoring speed is supported to max.

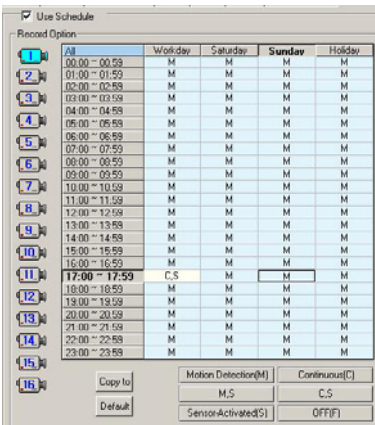
For example, in case of using DVR-PC8/16, monitoring speed is maintained to max frame not depending on the recording setting frame number in regards to channel is set as 1 frame in 320x240, monitoring speed will be max speed of 120fps when [Display MAX] is selected. This feature is can be used in setting method of frame number by channel

6.8 Schedule

In this menu, the recorded method per camera can be selected and a schedule may be created for each camera on an hourly basis. To use this category, [Stop Recording] button on the main screen had to be pressed to stop the recordings.



6.8.1. Use Schedule



Stop the recording by pressing [Stop Recording] in the main frame to change the setting value. Check "Use Schedule" and then click [Start Recording]. Current setting status is applied. Saved set point is restored when recording is stopped.

Record Option

To set up each of the camera and time,

1. Select camera number to set recording mode. The selected camera will change in color and the list to set will appear.
2. Set each time and day for recording schedule. To add schedule, choose the days and times by dragging the mouse.

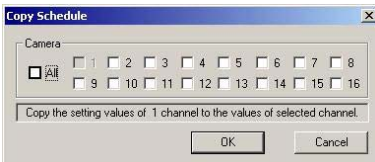
Copy

Copy the preset selected schedule (all the list in the category) to preset channel. Check camera number box to copy. Select "All" when all the channels are required.

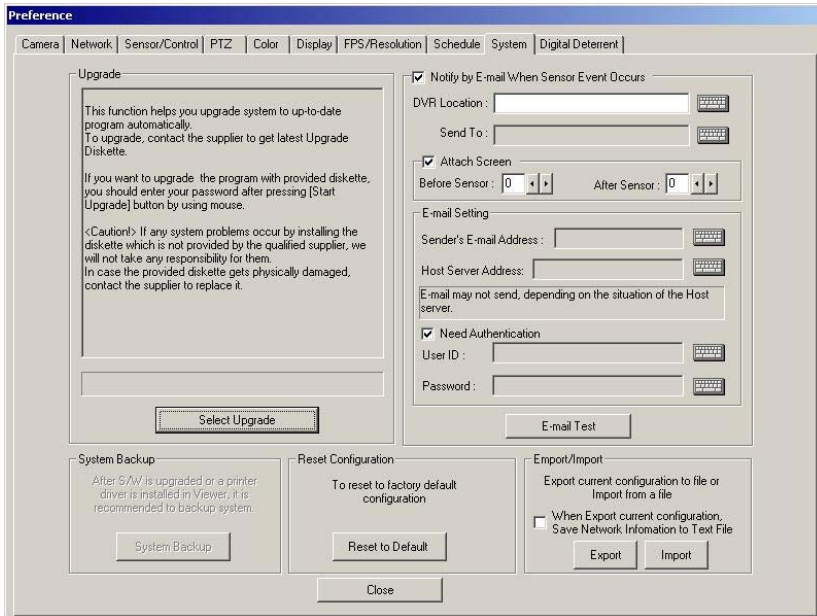
Default

Set all the days of schedule in the chosen channel to default. (Default: Motion Detection (M))

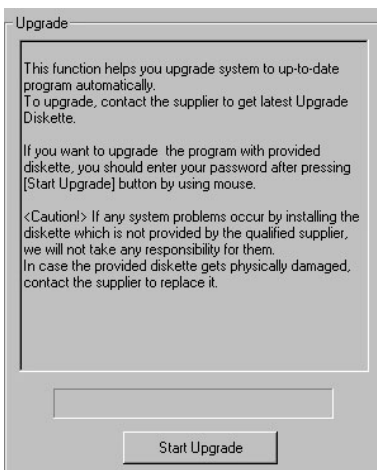
Select the standard of recording for the corresponding time range. There are six modes to activate the recording modes.



6.9 System



6.9.1 Upgrade



Use CD-R or USB storage device for program upgrade in the DVR.

Below is the way to install automatically.

1. Press [Start Upgrade] button.
2. Select a folder that has the programs (Disk1).
3. Insert the disk or the drive and click on the executable file.
4. When the installation is finished, the system will automatically reboot.

Note Do not forget to press the System Backup button after system upgrade had been done.

6.9.2. Notify by E-mail When Sensor Event Occurs

When this box is chosen, e-mail will be sent to the mailbox when there is sensor event.

DVR Location

Input the name of the DVR

Send To

Input the address of the recipient. Then, the e-mail will be sent to the first address and the e-mails from second address will be sent to BCC(Blind Carbon Copy).

Attach Screen

Set to change the image of frame to JPG format before attaching the image. File may not be attached and only the sensor alarm may be sent when the file is protected with password.

Total images attached will be [Before Sensor + After Sensor + 1 (while sensor event)].

1. Before Sensor: From the beginning of sensor alarm, set the frames for images those are recorded previously.
2. After Sensor: From the beginning of sensor alarm, set the frames for images those are recorded later.
3. When both "Before Sensor" and "After Sensor" items are 0, only the first frame of the sensor activation period will be attached.

Setting E-mail

1. Address of the Sender: Input the address of the sender. Input the mail address according to "Host Server Address".
2. Host Server Address: Input the server address.

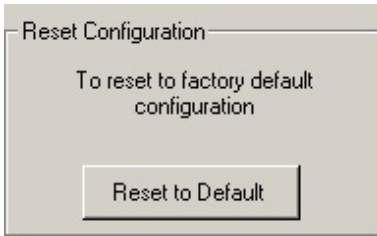
Require Authentication

According to the type of the server, the server will require authentication. When the server require authentication, select "Need Authentication" box and fill in "User ID" and "Password" category.

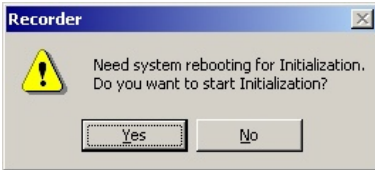
E-mail Test

Send e-mail for test.

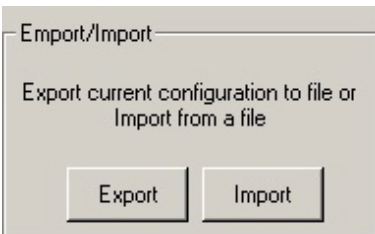
6.9.3. Reset Configuration



Click the [Initialization] button and all the setting will go back to default.



6.9.4. Export/Import

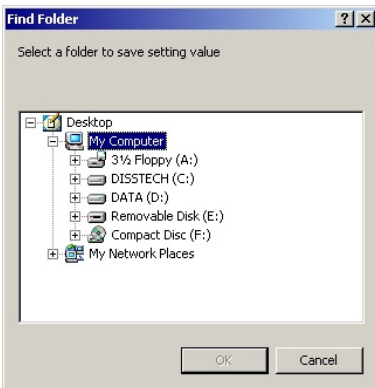


Export

Save setting value of the DVR to a disk.

Import

Call up the saved setting values and set the value. The system reboots while this functions.

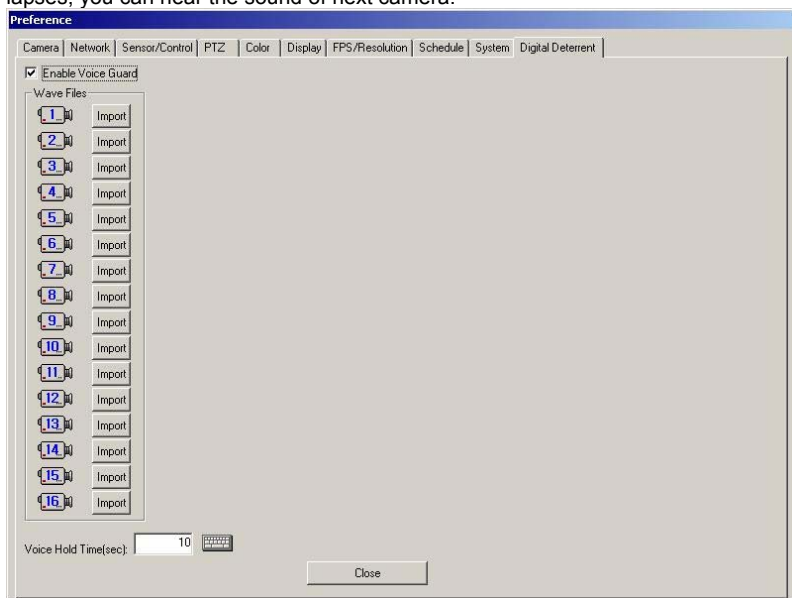


6.10 Digital Deterrent

You can hear sound of the stored WAV file when ‘ Enable Voice Guard’ is checked and a motion sensor is operating.

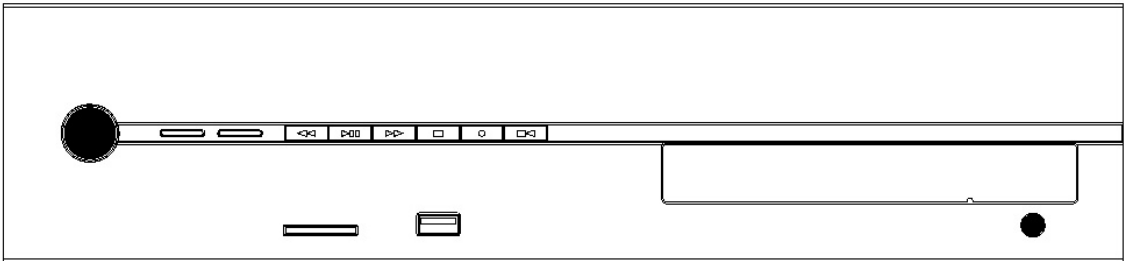
Import You can also store the WAV file of each channel separately by clicking ‘ Import’ button.

Voice Hold Tim: Upon selecting ‘ voice hold time’ , you can only hear the sound of first active camera even when several motion sensors become active between selected time interval (in sec). When the selected time (sec) interval lapses, you can hear the sound of next camera.



7. Instant Playback

This is a feature, ideal for users, who are familiar with a VCR. By using VCR buttons, you can quickly and conveniently search and play stored video files. In addition, it provides a feature that enables (file) backup to a preferred media (USB memory stick/ memory card/CD) while searching and playing video files. In other words, you can simultaneously watch video images of selected record time from a selected camera, and you can record the same images to CD, USB or memory card.



- [<<] REW - Rewind
- [>>] P/P – Play or Pause
- [>>>] FF – Fast Forward
- [■] STOP - Stop
- [●] REC - Record
- [CAM] CAM - Camera

7.1 VCR Mode

At live watch view, if you press [<<] [>>] [>>>] [■] [CAM] buttons, a list appears in VCR mode. If you press [●] button, DVR plays the lowest numbered channel (ex: from number 1 to 16, the lowest number is 1) in the live watch view while recording it to a selected media. In this case, it is on VCR Record Mode. In VCR mode, you cannot able to use a mouse and keyboard. Play/record time starts on the hour, currently stored for the channel. From menu, displayed in each pop-up window, each [<<] [>>] [>>>] [■] button functions as [up][select][down][close].

7.1.1. When [] [] [] [] [] buttons are pressed.



- 1) DVR – Playback or Record: In “ VCR Play and Record Mode” , DVR plays back stored video files. If you prefer, you can record currently playing video files to other media. First view being played should be the lowest among recorded channels.
- 2) CD-ROM – playback only: enters “ VCR play mode” . Only when you have a video file in the CD-ROM, can you play the CD-ROM. You can only make a playback and cannot record the video file to other storage devices
- 3) Card – playback only: enters “ VCR play mode” . Only when you have a video file in the memory card, can you play the video file in the memory card. You can only make a playback and cannot record the video file to other storage devices.
- 4) USB – playback only: enters “ VCR play mode. Only when you have a video file in the USB, can you play the video file in the USB. You can only make a playback and cannot record the video file to other storage devices

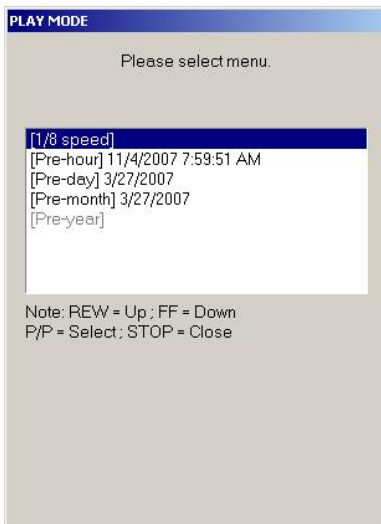
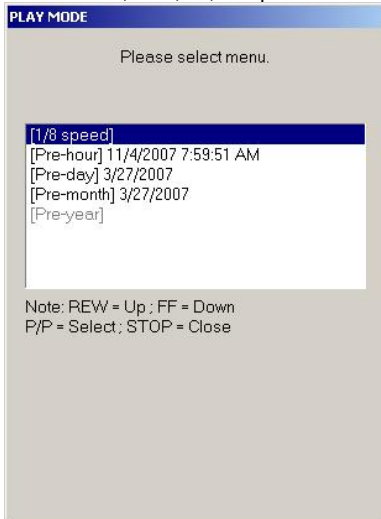
7.1.2. When [] button are pressed.

The lowest channel is played from the current live watch view while recording begins. In this case, you are in VCR record mode.

7.2 VCR Playback and Record Mode

7.2.1. [⏮] Rewind

If you press [⏮] button in playback view, the stored files are played backward at twice the normal speed (2x speed). If you press [⏮] again, it will play backward four times (4x) to eight times (8x) the normal speed. After 8x speed, you can select 1/8x speed, previous hours, previous day, previous month, previous year. After 1/8x speed follows 1/4x, 1/2x, 1x, 2x speed.

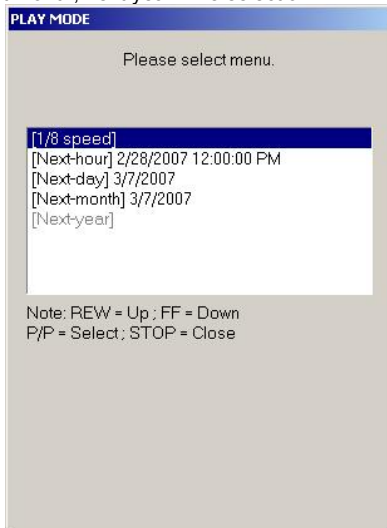


7.2.2. [▶] Play or Pause

While the video file is being played in the playback view, press [▶] button and the video temporarily pauses. If you press [▶] button while the video is pause, the video file is played at normal speed.

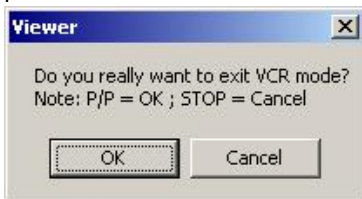
7.2.3. [▶▶] Fast Forward

Press [▶▶] button in playback view, and stored video data is played at 2x speed. Press [▶▶] button once more, and video data is played forward at 4x, 8x speed. After 8x speed, you can select 1/8x, next hour, next day, next month, next year. The selection AFTER 1/8x is 1/4x, 1/2x, 1x, 2x SPEED.



7.2.4. [■] Stop

a) In playback view, VCR mode ends.



b) After record starts, the record stops.

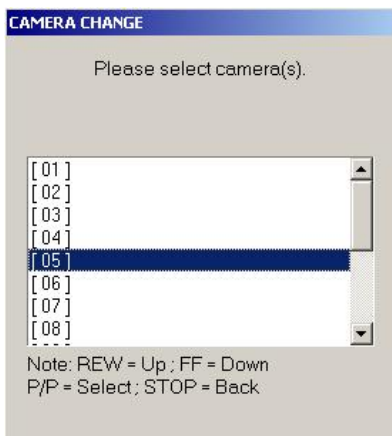
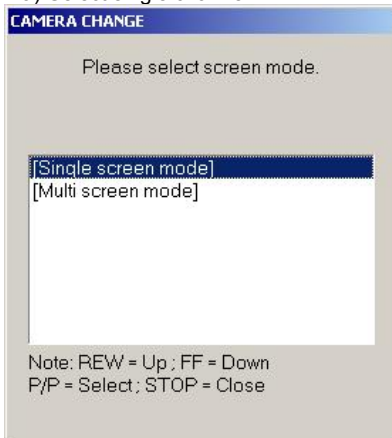
7.2.5. [●] Record

Enters VCR record mode, you can record the searched video file into any storage device: CD-ROM, USB-Memory, Memory card)

7.2.6. [CAMERA] Camera

If you press [CAMERA] button in playback view, a window, where you can select [Single screen mode] and [Multi-screen mode], appears. If you select [Single screen mode], you can watch one screen, and if you select [Multi-screen mode], you can watch screens in numbers of 4, 9 and 16.

a) Select single channel



b) Select multi-channels

CAMERA CHANGE

Please select screen mode.

[Single screen mode]
[Multi screen mode]

Note: REW = Up ; FF = Down
P/P = Select ; STOP = Close

CAMERA CHANGE

Please select screen mode.

[4 CAMERAS]
[9 CAMERAS]
[16 CAMERAS]

Note: REW = Up ; FF = Down
P/P = Select ; STOP = Back


CAMERA CHANGE

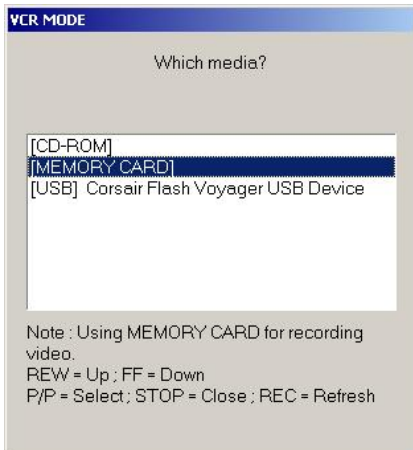
Please select camera(s).

[01,02,03,04]
[05,06,07,08]
[09,10,11,12]
[13,14,15,16]

Note: REW = Up ; FF = Down
P/P = Select ; STOP = Back







7.3 VCR Record Mode

- a) When you press [] button, a list appears for the possible storage media you can record in current DVR. Upon selecting the desirable storage media, the recording begins.



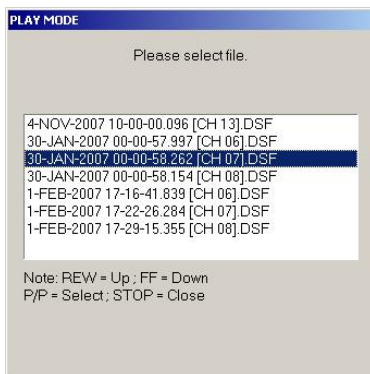
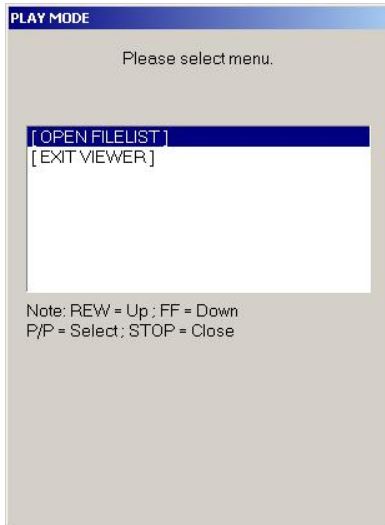
- b) When the recording begins, a " REC " sign in red appears in top right corner of the screen.



- c) If you wish to stop the recording, press a [] button. During recording, [], [], [], [] buttons don't work. Only the [] button works.

7.4 VCR Playback Mode

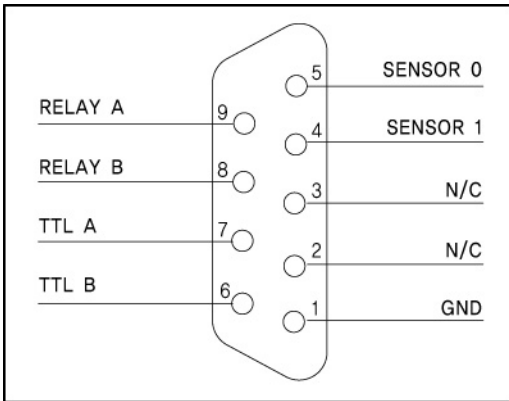
In VCR Play Mode, [RECALL], [STOP] buttons cannot be used, and you can only watch one channel. At initial play, a file directory appears for your selection. Afterward, you will need to press [MENU] button in order to see a file directory. When you press [MENU] button, [OPEN FILELIST] and [EXIT VIEWER] appears. When you select [EXIT VIEWER], the viewer closes.



8. APPENDIX

8.1 Pin Assignment of Alarm Port

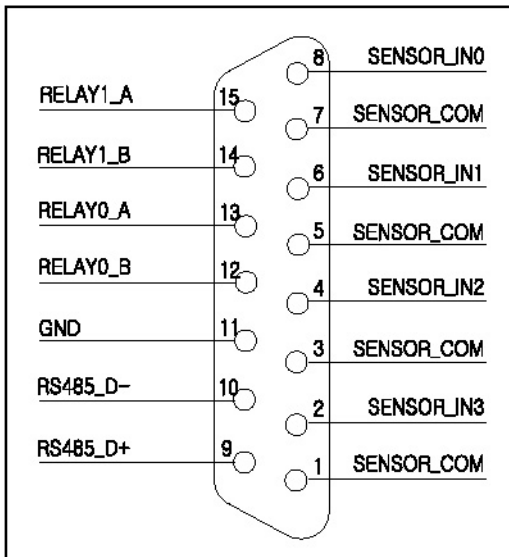
Refer to the pictures for connecting the pin assignment of alarm port. (DVR-PC8 Series)



No.	Description	No.	Description
1	GND	6	TTL B
2	N/C	7	TTL A
3	N/C	8	RELAY B
4	SENSOR 1	9	RELAY A
5	SENSOR 0		

Refer to the pictures for connecting the pin assignment of alarm port. (DVR-PC16 Series)

Alarm In: 4, Alarm Out: 2

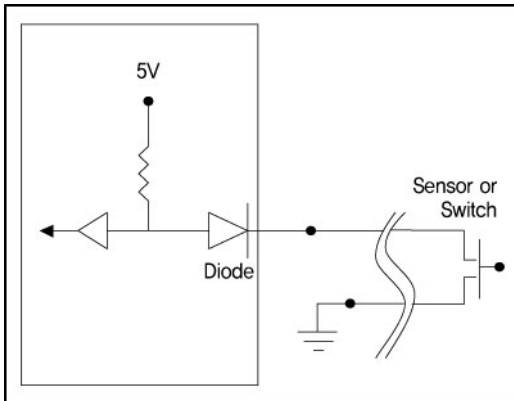


<Pin Assignment>

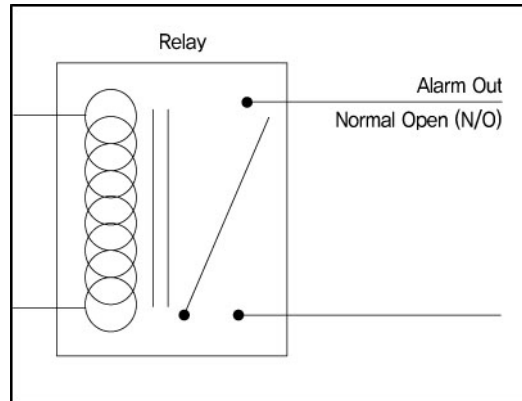
No.	Description	No.	Description
1	SENSOR_COM	9	RS485_D+
2	SENSOR_IN3	10	RS485_D-
3	SENSOR_COM	11	GND
4	SENSOR_IN2	12	RELAY0_B
5	SENSOR_COM	13	RELAY0_A
6	SENSOR_IN1	14	RELAY1_B
7	SENSOR_COM	15	RELAY1_A
8	SENSOR_IN0		

<Pin Description>

※ <Caution> D-Sub connector on the rear panel is male straight type.

Block Diagram for Alarm Input

1. Sensor Input: Normal Open (N/O), Normal Close (N/C)
2. Line impedance of cables should be less than 20Ω.

Block Diagram for Alarm Out

1. Alarm Out: Normal Open (N/O)
2. Maximum should be under DC24V 2A.

8.2 TCP/IP Port Setting Method using the firewall.

There is a firewall between the DVR-PC8/16 Series and remote sites. Remote site computer usually uses internet or private line to connect with the DVR-PC8/16 Series (protected by firewall equipment). According to the setting of the firewall, it could not be connected but if the firewall equipment are set as below, the connection would be made. The content for each port number is the usage of each port

TCP/IP Port	Usage
1.	Log-in connection: 7000
2.	Transmission for live viewing: 8000, 8001
3.	Transmission for remote playback: 9000, 9001
4.	Connection for server diagnosis: 8002
5.	Transmission for alarmed video notification: 8003
6.	Time synchronization: 3000
7.	(Multicast protocol port, IP = 230.255.255.255)
8.	SMTP for e-mail event notification: 25
9.	Two-Way Audio: 7010, 7011

Assign the Log-In port manually and the DVR will automatically assign consecutive ports for the remaining functions listed on the left.

(Each port number is fixed)

Note In case of using the NAT from the firewall or router equipment, no problem will occur when external IP address is changed to internal IP address (ex. 192.168.x.x),